BY-LAW NUMBER 2003/16

BY-LAW NO. 2003/16 is a by-law of the County of Wetaskiwin No. 10 in the Province of Alberta, to authorize the adoption of an Area Structure Plan for the purpose of providing a framework for subsequent subdivision and development of the area known as Oakes Bay in SE 36-46-6-W5M and NE 25-46-6-W5M in accordance with Section 633 of the Municipal Government Act, Chapter M-26.1, Revised Statutes of Alberta 1994, and amendments thereto.

WHEREAS: at the requirements of County Council, as per Action 13.1 of the Buck Lake Management Plan, an Area Structure Plan has been prepared for portions of SE 36-46-6-W5M and NE 25-46-6-W5M.

AND WHEREAS: the proposed Area Structure Plan has been widely circulated and discussed within the County pursuant to Section 230, 606(1), and 633(1) of the Municipal Government Act, 1994, Chapter M-26.1, and amendments thereto.

NOW THEREFORE: the County of Wetaskiwin No. 10, duly assembled, hereby enacts as follows:

1. The document attached to this By-law as "Appendix A", together with accompanying maps, is hereby adopted as the *"Oakes Bay Structure Plan for SE 36-46-6-W5M and NE 25-46-6-W5M";* subject to the following amendments:

   - Road Construction: Add "Range Road 60 from the correction line road south to the main entrance to Oakes Bay will be upgraded as necessary to meet current County standards".

   - Sewer: Change to read "Each lot is large enough to have on-site sewage disposal. It will be the choice of the owner, subject to the provincial plumbing regulations, whether they choose to install a field or a pump-and-haul system".

   - Impact on Environment: Add "If required by the County, part of the frontage of the community lot will be subject to an environmental reserve easement to ensure minimal interference with the shoreline".

Amended by Bylaw 2005/18 2005/23

   - Roadway access: Add "At the time of subdivision, the existing access easement will be discharged".

   - Boat Launch: delete existing and replace by: "Lakeshore land west of the road will be owned in common by all lot owners. A single boat launch will be built there."

   - Add new section entitled Reserves: "Land along the creek, both east and west of the access road, will be dedicated as environmental reserve".

   - Add new section entitled Fire Protection: "A fire pond will be excavated adjacent to the creek where it is crossed by he access road. The size of this pond and the access will be as required by the County's fire chief. The pond will be accommodated on a public utility lot."

   - Add new section entitled Public Access: "A municipal reserve lot will be dedicated on the lakeshore immediately east of the access road."

- Public access will be guaranteed along the lakeshore west of the access road by means of easement or municipal ownership.
- Appendix detailing roads standards to be removed (some are out of date and some refer to MD of Brazeau).
- Appendix referring to various sewer systems to be removed (may not meet Alberta standards)
- Map immediately following text to be amended.
- Removal for requirement of gated access between Greystones Subdivision and proposed development; and the road be approved as an "emergency" access.

2. This by-law comes into effect on the date of third reading.

READ: A First time this 10th day of March A.D., 2003.

READ: A Second time this 10th day of March, A.D., 2003.

READ: A Third time and finally passed this 10th day of March, A.D., 2003.

REEVE

SECRETARY-TREASURER

COUNTY OF WETASKIWIN

Area Structure Plan

OAKES BAY
W½ SE 36-46-6-W5M
& NE 25-46-6-W5M

Approved by County of Wetaskiwin No. 10 Council March 10, 2003
By-law 2003/16

Italics show changes required by Council
Other text as submitted by Johnsons

Area Structure Plan

OAKES BAY
W ½ SE 36-46-6-W5M & NE 25-46-6-W5M

1. Previous Land Use:

1.1. Dorothy and Walter Oakes ran Oakes Bay as a campsite for many years. With Walter's passing, Dorothy has decided to sell her property and move into town.

2. Road Construction:

2.1. All road construction will be paid for by Johnson. Road construction will be done to County specifications.

2.2. *Range Road 60 from the correction line road south to the main entrance to Oakes Bay will be upgraded as necessary to meet current County standards.*

3. Sewer:

3.1. *Each lot is large enough to have on-site sewage disposal. It will be the choice of the owner, subject to the provincial plumbing regulations, whether they choose to install a field or a pump-and-haul system.*

4. Impact on Environment:

4.1. Johnson has left a large area for environmental reserve (see map). Johnson has planned to keep the lower portion closest to the lake zoned as Recreation and intends to have this large area dedicated to privately owned community lot(s). This allows for undisturbed lakeshore.

4.2. *If required by the County, part of the frontage of the community lot will be subject to an environmental reserve easement to ensure minimal interference with the shoreline, and public access will be guaranteed along this shoreline.*

5. **Flood Risk:**

5.1. Oakes Bay is situated on fairly high ground. As the plan for this subdivision, all the lots would be built on high ground with a large community lot between the lake and the property line.

6. **Roadway access:**

6.1. Access to property is from gravelled municipal roads to the northeast corner of SE 36. Recreation zoned property has a gravelled roadway along a registered easement on the northerly portion of the east half of the quarter to the northeasterly corner of the property. Roadway ten extends diagonally across the property to Recreation zoned area. There is also a small creek which extends diagonally from the west boundary to the southeast corner of the property.

6.2. This proposed subdivision will have its own approach off the road allowance. Johnson will be purchasing the land required to build road to County of Wetaskiwin standards from Verle Guard.

6.3. *At the time of subdivision, the existing access easement will be discharged.*

7. **Boat Launch:**

7.1. *Lakeshore land west of the road will be owned in common by all lot owners. A single boat launch will be built there.*

8. **Reserves:**

8.1. *Land along the creek, both east and west of the access road, will be dedicated as environmental reserve.*

9. **Fire Protection:**

9.1. *A fire pond will be excavated adjacent to the creek where it is crossed by the access road. The size of this pond and the access will be as required by the County's Fire Chief. The pond will be accommodated on a public utility lot.*

10. **Public Access:**

10.1. A municipal reserve lot will be dedicated on the lakeshore immediately east of the access road.

10.2. Public access will be guaranteed along the lakeshore west of the access road by means of easement or municipal ownership.

11. **Stages:**

11.1. Beyond rezoning, it is Johnson's intention to develop as "first stage" the lots on the southwest side into a community lot plus approximately 19 *cottage* lots. The remainder of the subdivision would be developed as soon as possible.

12. **Attachments:**

12.1. Map

12.2. Land title

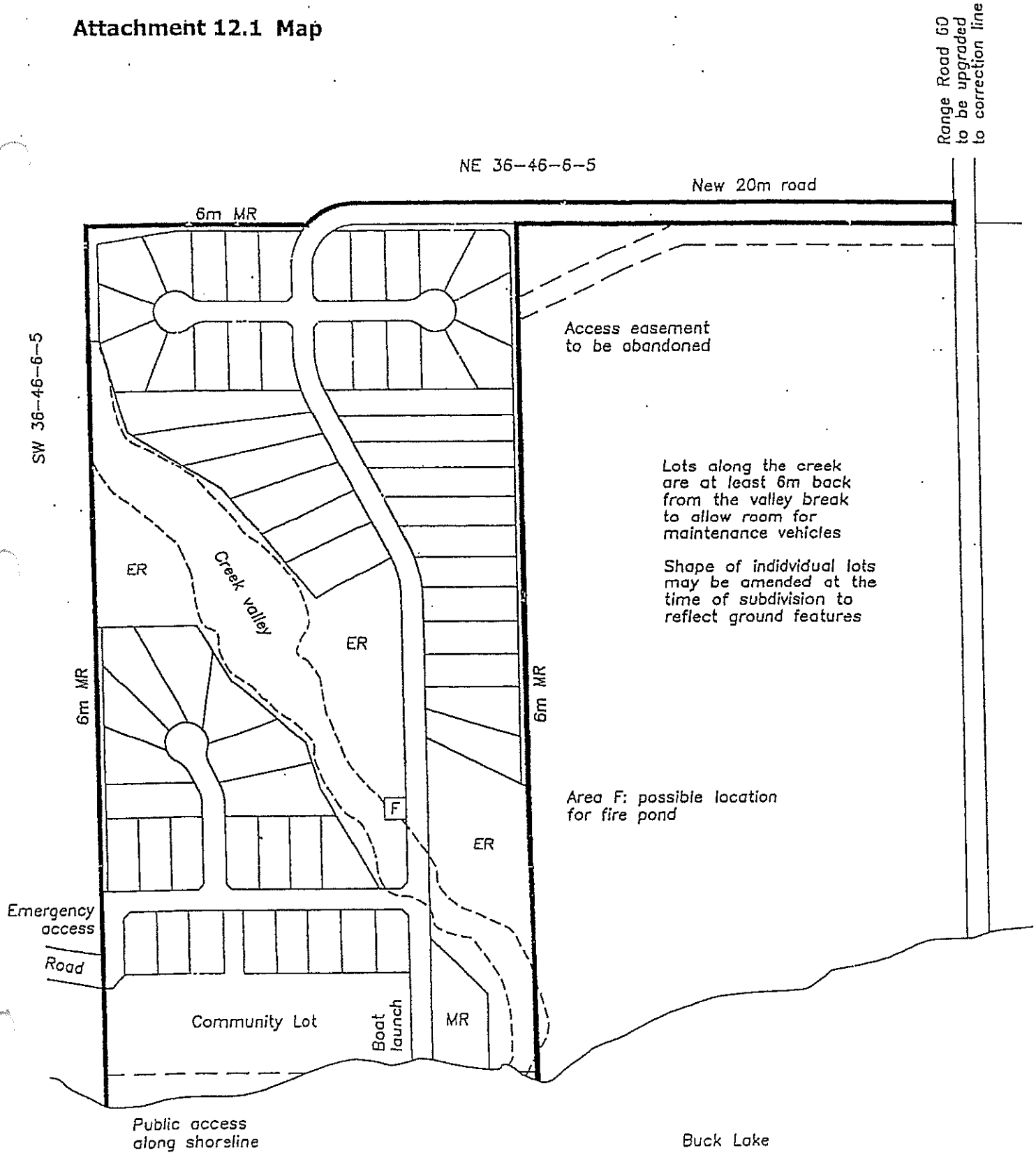
12.3. Access easement

12.4. Groundwater evaluation by Sabatini

12.5. Bacteriological interpretation of drinking water from well on site

Area Structure Plan – Oakes Bay
W½ 36-46-6-W5M & NE 25-46-6-W5M

Attachment 12.1 Map



Attachment 12.2 Land Titles

A. L. T. A.

NORTH ALBERTA LAND REGISTRATION DISTRICT

R E M O T E L A N D T I T L E S E A R C H

SEARCH DATE: 07/04/2003

S LINC	SHORT LEGAL	TITLE NUMBER
0022 478 671	5;6;46;36;SE	012 403 109 +1

LEGAL DESCRIPTION

MERIDIAN 5 RANGE 6 TOWNSHIP 46
SECTION 36
ALL THAT PORTION OF THE SOUTH EAST QUARTER
NOT COVERED BY THE WATERS OF BUCK LAKE, AT THE TIME OF THE SURVEY OF THE
SAID TOWNSHIP SIGNED AT OTTAWA ON THE 15TH DAY OF APRIL A.D. 1910, CONTAINING
61.06 HECTARES (150.90 ACRES) MORE OR LESS
EXCEPTING THEREOUT:
THE EASTERLY (1320) FEET IN PERPENDICULAR WIDTH THROUGHOUT OF THE SOUTH EAST
NOT COVERED BY THE WATERS OF BUCK LAKE, AT THE TIME OF SURVEY OF THE SAID LAKE
AS SHOWN ON SAID PLAN OF SURVEY, SIGNED AT OTTAWA ON THE 15TH DAY OF APRIL,
A.D. 1910, CONTAINING 28.82 HECTARES (71.30 ACRES) MORE OR LESS
EXCEPTING THEREOUT ALL MINES AND MINERALS

ESTATE: FEE SIMPLE

MUNICIPALITY: COUNTY OF WETASKIWIN NO. 10

REFERENCE NUMBER: 25H241A1

REGISTRATION	DATE (DMY)	REGISTERED OWNER(S) DOCUMENT TYPE	VALUE	CONSIDERATION
012 403 109	12/12/2001	AFFIDAVIT OF SURVIVING JOINT TENANT		

OWNERS

DOROTHY GRACE OAKES
PENDRYL
BERTA

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
772 089 344	18/05/1977	CAVEAT RE : LEASE CAVEATOR - RILEY'S DATASHARE INTERNATIONAL LTD..
882 240 611	07/10/1988	EASEMENT AS TO PORTION OR PLAN:8822342 "EASEMENT OVER PT. SE-36-46-6-W.5TH"
902 159 688	01/06/1990	UTILITY RIGHT OF WAY GRANTEE - ALBERTA GOVERNMENT TELEPHONES.
002 131 401	16/05/2000	CAVEAT RE : RIGHT OF WAY AGREEMENT CAVEATOR - PENN WEST PETROLEUM LTD.. PO BOX 1450, STATION M CALGARY ALBERTA AGENT - ACCESS LAND SERVICES LIMITED.
022 085 672	12/03/2002	CAVEAT RE : ASSIGNMENT OF LEASE CAVEATOR - DON PLEWES MACLEOD DIXON 3700, 400-3 AVE SW CALGARY ALBERTA T2P4H2 AGENT - PHILIP MATKIN
022 326 275	03/09/2002	CAVEAT RE : VENDOR'S LIEN CAVEATOR - DOROTHY GRACE OAKES C/O PETER C MCELHANEY 201, 4702-49 AVE RED DEER ALBERTA T4N6L5 AGENT - PETER C MCELHANEY
032 021 439	15/01/2003	CAVEAT RE : OFFER TO PURCHASE CAVEATOR - LEN JOHNSON C/O LOVATT OLSEN 404, 10216-124 ST EDMONTON ALBERTA T5N4A3 AGENT - WAYNE LOVATT

TOTAL INSTRUMENTS: 007 *END OF SEARCH * SR# - J351334 /XLTCWET1
YOUR FILE #: OAKES BAY TOTAL SR FEES: $5.00

A. L. T. A.

NORTH ALBERTA LAND REGISTRATION DISTRICT

R E M O T E L A N D T I T L E S E A R C H

SEARCH DATE: 07/04/2003

S LINC	SHORT LEGAL	TITLE NUMBER
0022 478 663	5;6;46;25;;15	012 403 109

LEGAL DESCRIPTION

MERIDIAN 5 RANGE 6 TOWNSHIP 46
SECTION 25
ALL THAT PORTION OF THE NORTH HALF OF LEGAL SUBDIVISION (15)
NOT COVERED BY ANY OF THE WATERS OF BUCK LAKE, AS SHOWN ON A PLAN OF SURVEY
OF THE SAID TOWNSHIP SIGNED AT OTTAWA ON THE 15TH DAY OF APRIL A.D. 1910,
CONTAINING 0.849 HECTARES (2.10 ACRES) MORE OR LESS
EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME

ESTATE: FEE SIMPLE

MUNICIPALITY: COUNTY OF WETASKIWIN NO. 10

REFERENCE NUMBER: 25H241

REGISTERED OWNER(S)

REGISTRATION	DATE(DMY)	DOCUMENT TYPE	VALUE	CONSIDERATION
012 403 109	12/12/2001	AFFIDAVIT OF SURVIVING JOINT TENANT		

OWNERS

DOROTHY GRACE OAKES
OF PENDRYL
ALBERTA

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
772 089 344	18/05/1977	CAVEAT RE : LEASE

(CONTINUED)

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
		CAVEATOR - RILEY'S DATASHARE INTERNATIONAL LTD..
022 326 275	03/09/2002	CAVEAT RE : VENDOR'S LIEN CAVEATOR - DOROTHY GRACE OAKES C/O PETER C MCELHANEY 201, 4702-49 AVE RED DEER ALBERTA T4N6L5 AGENT - PETER C MCELHANEY
032 021 439	15/01/2003	CAVEAT RE : OFFER TO PURCHASE CAVEATOR - LEN JOHNSON C/O LOVATT OLSEN 404, 10216-124 ST EDMONTON ALBERTA T5N4A3 AGENT - WAYNE LOVATT

TOTAL INSTRUMENTS: 003 *END OF SEARCH * SR# - J351355 /XLTCWET1
YOUR FILE #: OAKES BAY TOTAL SR FEES: $5.00

Attachment 12.3 Access Easement

VI. ACCESS EASEMENT ACROSS ADJACENT PROPERTY TO THE EAST

GRANT OF EASEMENT OF RIGHT OF WAY dated this 8 day of Sept., A.D. 19 88.

BETWEEN:

MILTON REINHOLD FENSKE and MARGERY ALICE FENSKE of the City of Edmonton, in the Province of Alberta;
(hereinafter called "the Grantors")

OF THE FIRST PART

- and -

WALTER GILBERT OAKES and DOROTHY GRACE OAKES, of Buck Lake, in the Province of Alberta;
(hereinafter called "the Grantees")

OF THE SECOND PART

GRANT OF RIGHT-OF-WAY

WE, MILTON REINHOLD FENSKE and MARGERY ALICE FENSKE, being the registered owners of an Estate in Fee Simple as joint tenants and not as tenants in common, subject, however, to such encumbrances, liens and interest as are notified by memorandum underwritten in all that certain tract of land described as:

EASE. FOR BENEFIT OF PT. SE¼ 36 (Plan 1882 2342)

THE EASTERLY 1320 FEET IN PERPENDICULAR WIDTH OF THE SOUTH EAST QUARTER OF SECTION THIRTY SIX (36), TOWNSHIP FORTY SIX (46), RANGE SIX (6), WEST OF THE FIFTH MERIDIAN NOT COVERED BY THE WATERS OF BUCK LAKE, AT THE TIME OF SURVEY OF THE SAID LAKE, AS SHOWN ON A PLAN OF SURVEY OF THE SAID TOWNSHIP SIGNED AT OTTAWA ON THE 15th DAY OF APRIL, A.D. 1910, CONTAINING 71.3 ACRES, MORE OR LESS

RESERVING THEREOUT ALL MINES AND MINERALS

(hereinafter called the said lands) do hereby in consideration of the Grantee's foregoing any rights pursuant to an Easement of Right-of-Way Agreement registered by way of Caveat on November 12, 1974 discharging the said Caveat #1075 V.G. and the preparation by the Grantees of a proper plan showing the survey of access right-of-way as it actually exists, do grant to the said Grantees, WALTER GILBERT OAKES and DOROTHY GRACE OAKES, the owners of that piece of land legally described as:

FIRSTLY: ALL THAT PORTION OF THE NORTH HALF OF LEGAL SUBDIVISION 15 OF SECTION TWENTY FIVE (25), TOWNSHIP FORTY SIX (46), RANGE SIX (6), WEST OF THE FIFTH MERIDIAN NOT COVERED BY ANY OF THE WATERS OF BUCK LAKE, AS SHOWN ON A PLAN OF SURVEY OF THE SAID TOWNSHIP SIGNED AT OTTAWA ON THE 15th DAY OF APRIL, A.D. 1910, CONTAINING 2.10 ACRES, MORE OR LESS

RESERVING UNTO HER MAJESTY ALL MINES AND MINERALS AND THE RIGHT TO WORK THE SAME.

SECONDLY: ALL THAT PORTION OF THE SOUTH EAST QUARTER OF SECTION THIRTY SIX (36) SAID TOWNSHIP AND RANGE, NOT COVERED BY THE WATERS OF SAID BUCK LAKE, AT THE TIME OF THE SURVEY OF THE SAID LAKE, AS SHOWN ON SAID PLAN OF SURVEY, CONTAINING 150.90 ACRES, MORE OR LESS

EASE. OVER PT. SE 1/4-36 (PLAN 882 2842)

EXCEPTING THEREOUT:

THE EASTERLY 1320 FEET IN PERPENDICULAR WIDTH THROUGHOUT OF THE SOUTH EAST QUARTER NOT COVERED BY THE WATERS OF BUCK LAKE, AT THE TIME OF SURVEY OF THE SAID LAKE AS SHOWN ON SAID PLAN OF SURVEY, SIGNED AT OTTAWA ON THE 15th DAY OF APRIL, A.D. 1910, CONTAINING 71.3 ACRES, MORE OR LESS

RESERVING THEREOUT ALL MINES AND MINERALS

their heirs, executors, administrators and assigns in perpetuity, free liberty and right-of-way and passage of ingress, egress and regress, in common with us, the Grantors, all that portion of the said land making up the roadway as shown on Plan Number 8822342 which plan has been submitted to Land Titles Office for the Northern Alberta Land Registration District together with this Grant of Right-of-Way Agreement.

IN WITNESS WHEREOF we have each hereunto set our hands and seals as of the day and year first above written.

SIGNED, SEALED AND DELIVERED)
in the presence of)
)
)
WITNESS as to the signatures of MILTON REINHOLD FENSKE and MARGERY ALICE FENSKE

MILTON REINHOLD FENSKE

MARGERY ALICE FENSKE

SIGNED, SEALED AND DELIVERED)
in the presence of)
)
)
WITNESS as to the signatures of WALTER GILBERT OAKES and DOROTHY GRACE OAKES

WALTER GILBERT OAKES

DOROTHY GRACE OAKES

Attachment 12.4 Groundwater Evaluation by Sabatini

Report On:
Aquifer Evaluation
Oakes Bay
SE - 36 - 46 - 6W5

Prepared For:
Karen & Len Johnson

Prepared By:
Sabatini Earth Technologies Inc.

January, 2003

SABATINI EARTH TECHNOLOGIES INC.

SABATINI EARTH TECHNOLOGIES INC.

203, 6919 - 32nd AVENUE N.W.
CALGARY, ALBERTA T3B 0K6
TEL: (403) 247-1813
FAX: (403) 247-1814

9315 - 35th AVENUE N.W.
EDMONTON, ALBERTA T6E 5R5
TEL: (780) 438-0844
FAX: (780) 435-1812

January 2, 2003

File: 0301-3878

Karen & Len Johnson
Box 174
Winfield, AB T0C 2X0

Dear Mr./Mrs. Johnson

RE: Aquifer Evaluation - SE - 36 - 46 - 6W5

An evaluation was undertaken to determine whether the aquifer underlying the above mentioned area can support a subdivision of 63 lots. A 24 hour pump test was performed at a rate of 7.5 imperial gallons per minute on a 103 foot deep well within the proposed subdivision area. No significant drawdown was observed after 8 minutes of pumping and the water level recovered to static water level within 9 minutes after pumping started.

These results indicate a highly productive aquifer. The data was not sufficient for determination of aquifer properties (transmissivity and storativity), but the strata and aquifer characteristics appear similar to a pump test conducted nearby in SW - 36. An aquifer transmissivity of 32 m^2/day and storativity of 0.0003 was noted and is used in subsequent calculations.

Calculations based on these numbers show that a maximum drawdown of 7 m is expected in any one well due to the effects of pumping that well and the neighbouring wells at a rate of 1250 m^3/year for 20 years. The available drawdown of 17 m shows that the wells will not go dry and, as per Section 23 of the Water Act, the aquifer is capable of supplying the proposed subdivision without causing an adverse affect on existing users.

Should you have any questions please do not hesitate to contact the undersigned

Yours truly,
SABATINI EARTH TECHNOLOGIES INC.

Ken Hugo, P.Geol.
APEGGA-P5773

Table of Contents

List of Plates

A) Introduction

At the request of Karen Johnston an aquifer evaluation was undertaken within a proposed subdivision located within the SE 1/4 of Section 36 - 46 - 6W5. The subdivision is located on the north shore of Buck Lake and is referred to as the Oakes Bay subdivision.

The location of the proposed subdivision is shown on Plate 1. The subdivision consists of a proposed 63 lots with a separate water well supplying a residence on each lot. The purpose of this investigation is to determine whether, under Section 23 of the Water Act, the aquifer underlying the subdivision can supply water to each residence at the rate of 1250 m^3/year without causing an adverse affect on proposed or existing well users.

B) Details of Pump Test

A 24 hour pump test was conducted on a 103 foot deep water well located within the proposed subdivision. The well was pumped at a rate of 7.5 imperial gallons per minute for 24 hours. The water levels decreased 40 inches within the first 40 minutes and showed no further decline during the remainder of the pumping period. The water levels returned to static levels within 9 minutes after pumping stopped.

No water well drillers report is available, and a search of the water well report on the Alberta Environment database did not show any record for this well. Although a productive aquifer is indicated the data is not sufficient to determine aquifer properties such as transmissivity and storativity needed for further calculations.

A more complete aquifer evaluation is available within the same section that was conducted by Hydrogeological Consultants within SW - 36 (their file 97-221, October, 1997). A pump test conducted on a well within this quarter, and utilizing an observation well, showed a transmissivity of 32 m^2/day and a storativity of 0.0003. The drillers well report from the pumped well is shown on Plate 2. The well test interpretation for the data from the observation

well is shown on the graph on Plate 3.

C) Details of Strata

The area is immediately underlain by a sand and clay unit which are interpreted to be lake deposits. As mapped by Shetsen (Quaternary Geology , Central Alberta) these sand and clay deposits are widespread and likely were deposited during glacial melting where Buck Lake is a relatively small remnant of a formerly much larger glacial lake. A water well drilled within SE - 36 (Plate 4) shows these deposits to be approximately 45 feet thick.

Underlying these deposits are sandstones, shales and occasional coals of the Paskapoo Formation. All water wells within the area are completed within the Paskapoo Formation. Some fracturing of the shales is indicated by production from shale zones. According to regional mapping undertaken by Tokarsky (Hydrogeology of the Rocky Mountain House Area, Alberta Research Council Report 71- 3), aquifer yields within the upper Paskapoo Formation within the area range from 650 to 3300 m^3/day.

The production from bedrock units which are overlain by clays and shales is favourable in lowering the risk of contaminants (i.e. septic field liquids) from entering the aquifers.

D) Well Survey

A search of the Alberta Environment database was undertaken to determine well users within the area. The database shows few users within the area (Plate 5), however previous investigations have shown that 84 residential parcels are existing or proposed immediately west of Oakes Bay within SW - 36 and SE - 35 - 46 - 6W5. The location of these parcels from the subdivision are shown on Plate 6.

All parcels within the adjoining subdivisions are expected to utilize individual water wells for domestic supply. As such a water supply rate of 1250 m^3/day is required for each of these lots.

E) Calculation of Safe Yield

A twenty year safe yield calculation can be undertaken to determine whether pumping on the wells in the proposed subdivision will have an adverse effect on the supply from existing wells within the entire development. This calculation involves predicting the total drawdown in an existing well that would occur after 20 years of pumping at a rate of 1250 m^3/years per day from that well plus the influence of all neighbouring wells including the well(s) in the proposed subdivision. If the total drawdown is greater than the available drawdown then the new subdivision is at risk for causing an adverse effect on existing users.

This determination can be calculated using the data derived from the pump test and using the principle of superposition with the Cooper-Jacob approximation to the Theis Equation:

$$\text{Drawdown (s)} = 0.183\frac{Q_1}{T}\log\frac{2.25Tt}{r_1^2S} + 0.183\frac{Q_2}{T}\log\frac{2.25Tt}{r_2^2S} + 0.183\frac{Q_3}{T}\log\frac{2.25Tt}{r_3^2S} + \ldots$$

where Q is the pumping rate prescribed (1250 m^3/year or 3.42 m^3/day), T is the transmissivity (from the pump test - 32 m^2/day), S is Storativity (from the pump test - 0.0003) and t is time (20 years). The various distances between wells is given by the "r" terms where r_1 is the well bore diameter, r_2 is the distance between the well in the proposed subdivision and the nearest well, r_3 is the distance between the well nearest to the proposed subdivision and the next nearest well and so on.

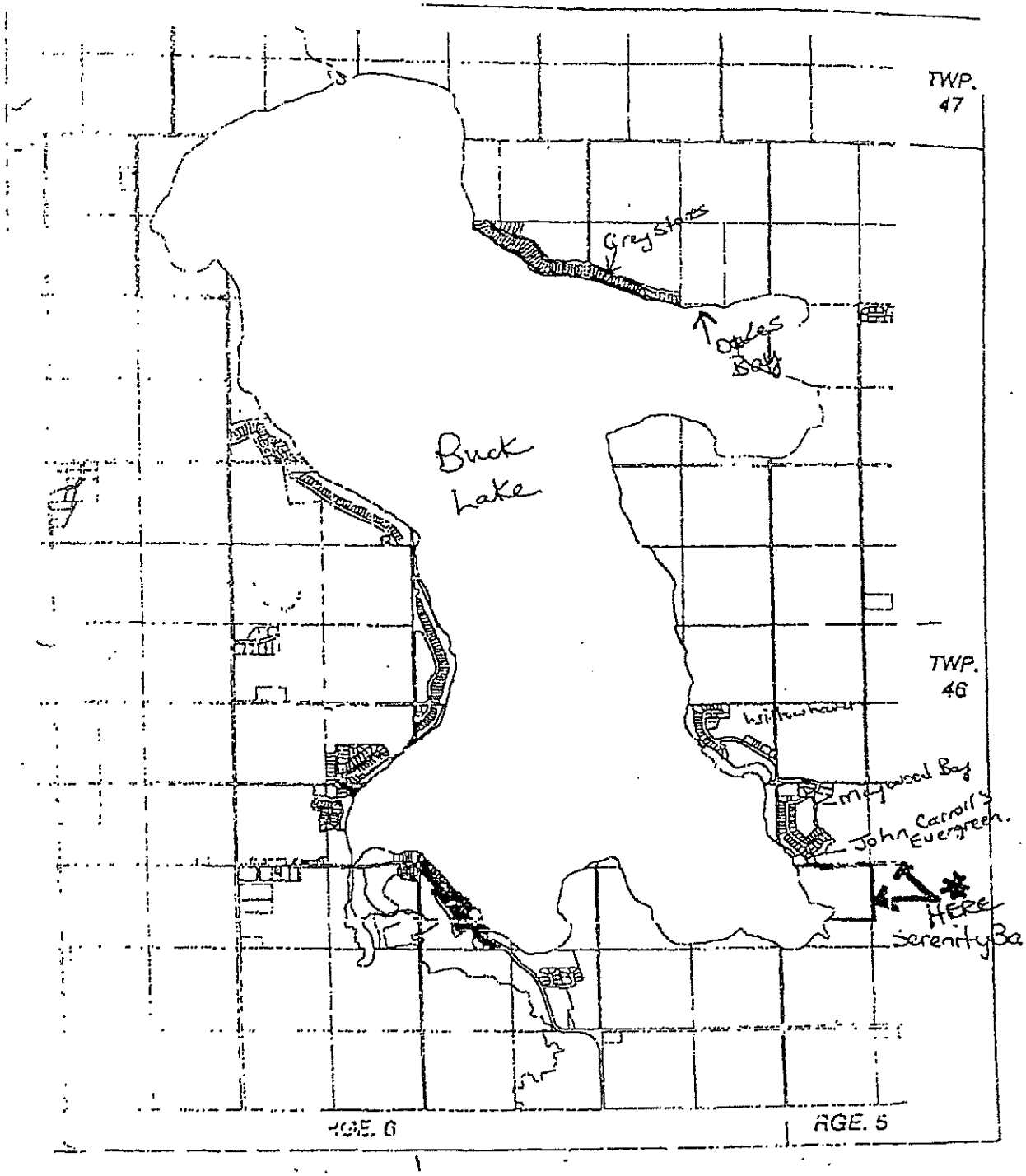
A well located in the centre of the subdivision would be most at risk from dewatering due to pumping of all wells in the area. Selecting a well in the centre of the subdivision shows that a drawdown of 0.23 m would be expected from pumping from that well alone. The added drawdown from the other 62 lots within SE - 36 would contribute an additional 5 m of drawdown. The contribution from the 27 lots in SW - 36 would add a further 1.7 m to the total drawdown. A total drawdown due to pumping of approximately 7 m would be expected in the centre of the development, with less drawdown in lots towards the edge of the development.

Nitrate	0	10
Sulfate	259.5	500
Total Dissolved Solids	830.64	500

Note: All results in mg/L except pH in pH units

The results show that the water can be characterized as a sodium bicarbonate-sulfate water of medium salinity. The water meets all drinking water quality guidelines with the exception of sodium and total dissolved solids. The limits for sodium and total dissolved solids are based on aesthetic, not health based, criteria and the levels of sodium and total dissolved solids are not thought to be significant.

The water can be treated with reverse osmosis or distillation procedures should lower salinity water be desired. Water softening is not recommended as this would raise the sodium. The Sodium Adsorbtion Ratio of the water is high and further addition of sodium into the water may have adverse affects on operation of a septic field should it receive water from this source.



Karen and Len Johnson

Sabatini Earth Technologies Inc.

Buck Lake area showing Oakes Bay Subdivision

Drawn By: KJH | Date Jan. 2/03 | Plate No: 1

ALBERTA ENVIRONMENTAL PROTECTION
COMPUTER GENERATED WATER WELL DRILLER'S REPORT FORM

WELL I.D. 476172

THIS DATA MAY NOT BE FULLY CHECKED; THE PROVINCE DISCLAIMS ALL RESPONSIBILITY FOR ITS ACCURACY:

CONTRACTOR:

NAME: MORRILL'S WATER WELL DRILLING LTD.

ADDRESS: Box 5089
Drayton Valley, Alberta T0E-0M0

LICENCE NO.: 0815 JOURNEYMAN NO. VB4852

WELL OWNER:

NAME: HEIGHINGTON, DON

ADDRESS: 11427 33A AVE, EDMONTON

POSTAL CODE: T6J 3H2

WELL LOCATION: IC#: 08

- OR LSD	SEC	TWP	RGE	W. MER
SW	36	046	06	W5

LOCATION VERIFICATION METHOD: MAP
LOCATION IN QUARTER:

LOT: BLOCK: PLAN:
WELL ELEV: Feet How obtain: NOT OBTAIN

LITHO:

Depth (Feet):	Lithology:
Ground to:	
20	Sandy Clay
34	Clay & Boulders
43	Brown Sandy Shale
52	Green Shale
62	Gray Shale
64	Gray Sandstone
66	Gray Shale
78	Gray Sand & Sandstone

DRILLING METHOD: ROTARY

TYPE OF WORK: NEW WELL

FLOWING WELL: No RATE:
GAS PRESENT: No OIL PRESENT: No
DATE OF ABANDONMENT:
MATERIAL USED:
PROPOSED USE: DOMESTIC

WELL COMPLETION DATA:

WELL FINISH: CASING/PERFORATED LINER
TOTAL HOLE DEPTH: 78 Feet

CASING TYPE: PLASTIC
SIZE OD: 5.50 Inch WALL THICKNESS: Inch
BOTTOM AT: 47 Feet

PERFORATED CASING/LINER:
TYPE: PLASTIC
SIZE OD: 4.50 Inch
WALL THICKNESS: Inch
TOP AT: 38 Feet BOTTOM AT: 78 Feet
PERFORATED FROM: 58 Feet TO: 78 Feet
Feet TO: Feet
Feet TO: Feet

SIZE OF PERFORATIONS: 0.250 Inch X 12.000 Inch
HOW PERFORATED: MACHINE
SEAL TYPE: CEMENT/GROUT
INTERVAL TOP: 0 Feet TO: 47 Feet
GEOPHYSICAL LOG TAKEN:
RETAINED ON FILE:

SCREEN:
MATERIAL:
SIZE ID (CLEAR): Inch SLOT SIZE: Inch
INTERVAL TOP: Feet TO: Feet
Feet TO: Feet
INSTALLATION METHOD:
TOP FITTINGS:
BOTTOM FITTINGS:
PACK TYPE:
GRAIN SIZE: AMOUNT:

PITLESS ADAPTER TYPE:
DROP PIPE TYPE: LENGTH: 40 Feet
DIAMETER: 1 Inch
ADDITIONAL PUMP INFORMATION:

PRODUCTION TEST:

TEST DATE: June 5, 1989 START TIME: 1:00

Elapsed Time in Min:Sec	Depth to Water Level During Pumping	Depth to Water Level During Recovery

WATER REMOVAL RATE DURING TEST: 20 Gal/Min
TEST DURATION: 2 Hours 0 Minutes
TESTING METHOD: AIR
DEPTH OF PUMP/DRILL STEM: 28 Feet
WATER LEVEL AT END OF TEST: 28 Feet
NON-PUMPING(STATIC) WATER LEVEL: FEET
TOTAL DRAWDOWN: 28 Feet

RECOMMENDED PUMPING RATE: Gal/Min
RECOMMENDED PUMP INTAKE AT: 40 Feet
TYPE OF PUMP INSTALLED: SUB
MODEL: GOULDS H.P.: 1/2

STARTED: June 5, 1989
COMPLETED: June 5, 1989
RECEIVED: October 23, 1989

COMMENTS:
(Maximum of 9 lines printed)

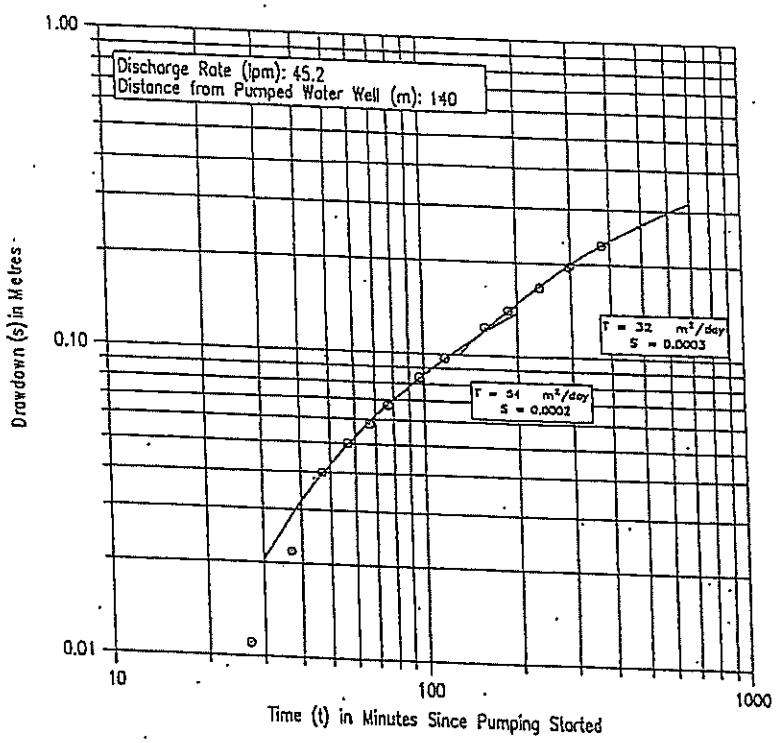
ADDITIONAL TEST AND/OR PUMP DATA:

CHEMISTRIES TAKEN: N HELD: DOCUMENTS HELD: 1

WELL OWNER'S ANTICIPATED WATER REQUIREMENTS PER DAY:

PRINTED: January 2, 2003 13:56:07 KEYED: October 26, 1999 GIC5 JA

PLATE 2



Lot 2 Observation Water Well
Used as Obs WW during AT II with Lot 6 Water Well

Hydrogeological Consultants Ltd.

Sabatini Earth Technologies Inc.

Karen and Len Johnson

Aquifer Test Interpretation - SW -36 - 46 - 6W5
(from Hydrogeological Consultants Report 97-221)

Drawn By: KJH | Date Jan. 2/03 | Plate No: 3

Water Well Drilling Report

Alberta Environment

The data contained in this report is supplied by the Driller. The province disclaims responsibility for its accuracy.

Well I.D.:	476169
Map Verified:	Not Verified
Date Report Received:	11/14/1974

1. Contractor & Well Owner Information

Company Name: BOB'S DRILLING & BACKHOE SERVICE
Licence No.:

Mailing Address: General Delivery
City or Town: Mulhurst Alberta
Postal Code: T0C-2C0

WellOwner's Name: FITCHARD, C.
Well Owner has a copy of this report:

P.O. Box Number:
Mailing Address: BUCK LAKE
Postal Code:

2. Well Location

1/4 or LSD	Sec	Twp	Rge	Westor M
SE	36	046	06	5

Location in Quarter
0 FT from Boundary
0 FT from Boundary

Lot Block Plan

Well Elev: FT
How Obtain: Not Obtain

3. Drilling Information

Type of Work: New Well
Reclaimed Well
Date Reclaimed(mm/dd/yyyy):
Materials Used:

Method of Drilling: Rotary

Flowing Well: N
Gas Present: N
Rate:
Oil Present: N

Proposed well use: Domestic
Anticipated Water Requirements/day: 0

6. Well Yield

Test Date (mm/dd/yyyy): 9/17/1974
Start Time: 11:00 AM
Test Method: Bailer

Are Drawdown & Recovery measurements in metric or imperial?

Non pumping static level: 0.0 FT

Rate of water removal: 1.5 Gal/Min

Depth of pump intake: 0 FT

Water level at end of pumping: FT

Distance from top of casing to ground level: Inch

Depth To water level
Elapsed Time
Drawdown Minutes:Sec Recovery
Total Drawdown: 22 FT

If water removal was less than 2 hr duration, reason why:

Recommended pumping rate: 0 Gal/Min

Recommended pump intake: 0 FT

Type Pump Installed
Pump Type:
Pump Model:
H.P.:
Any further pumptest information?

4. Formation Log

Depth from ground level (feet)	Lithology Description
25	Brown Clay
28	Sand
45	Blue Clay
55	Shale
57	Coal
65	Shale
68	Hard Shale
74	Shale
80	Soft Sandstone

5. Well Completion

Date Started(mm/dd/yyyy): 9/17/1974
Date Completed (mm/dd/yyyy): 9/17/1974

Well Depth: 80 FT
Borehole Diameter: Inch

Casing Type: Steel
Liner Type:

Size OD: 4.56 Inch
Size OD: 0 Inch

Wall Thickness: 0 Inch
Wall Thickness: 0 Inch

Bottom at: 52 FT
Top: 0 FT Bottom: 0 FT

Perforations
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT
from: 0 FT to: 0 FT

Perforations Size: 0 Inch x 0 Inch

Perforated by:

Seal: Driven
Sealed Interval:
from: 0 FT to: 52 FT

Screen Type:
Screen ID: 0 Inch

Intervals:
from: 0 FT to: 0 FT Slot Size: 0 Inch
from: 0 FT to: 0 FT Slot Size: Inch

Installation:

Fittings
Top:
Bottom:

Pack:
Grain Size:
Amount:

Geophysical Log Taken:
Retained on Files:

Additional Test and/or Pump Data
Chemistries taken By Driller: Y
Held: 0
Documents Held: 1

Pitless Adapter Type:
Drop Pipe Type:
Length: FT
Diameter: Inch

Comments:
DRILLER REPORTS WATER IS SOFT

7. Contractor Certification

Driller's Name:
Certification No.:
This well was constructed in accordance with the Water Well regulation of the Alberta Environmental Protection & Enhancement Act. All information in this report is true.

Signature Yr Mo Day

PLATE 4

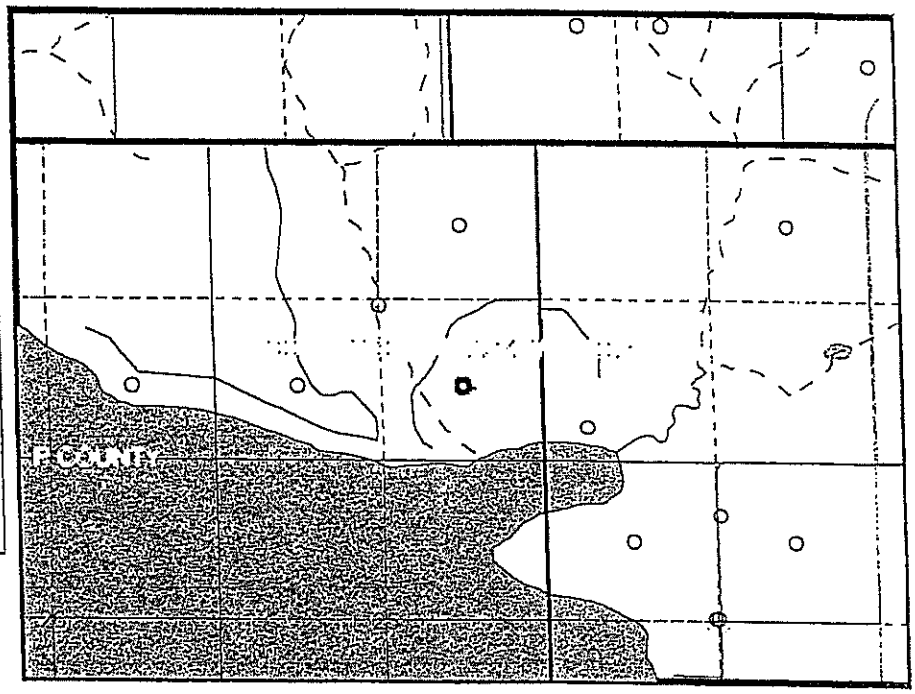
WATERWELL

WATER WELLSITES

MUNICIPAL

MUNICIPAL BOUNDARIES

- CITY
- FIRST NATIONS
- IMPROVEMENT DISTRICT
- INDIAN RESERVES
- METIS SETTLEMENTS
- RURAL MUNICIPALITY
- SPECIAL AREAS
- SPECIALIZED MUNICIPALITI...
- SUMMER VILLAGES
- TOWNS
- VILLAGES



SCALE 1 : 36,490

2,000 0 2,000 4,000 6,000

FEET

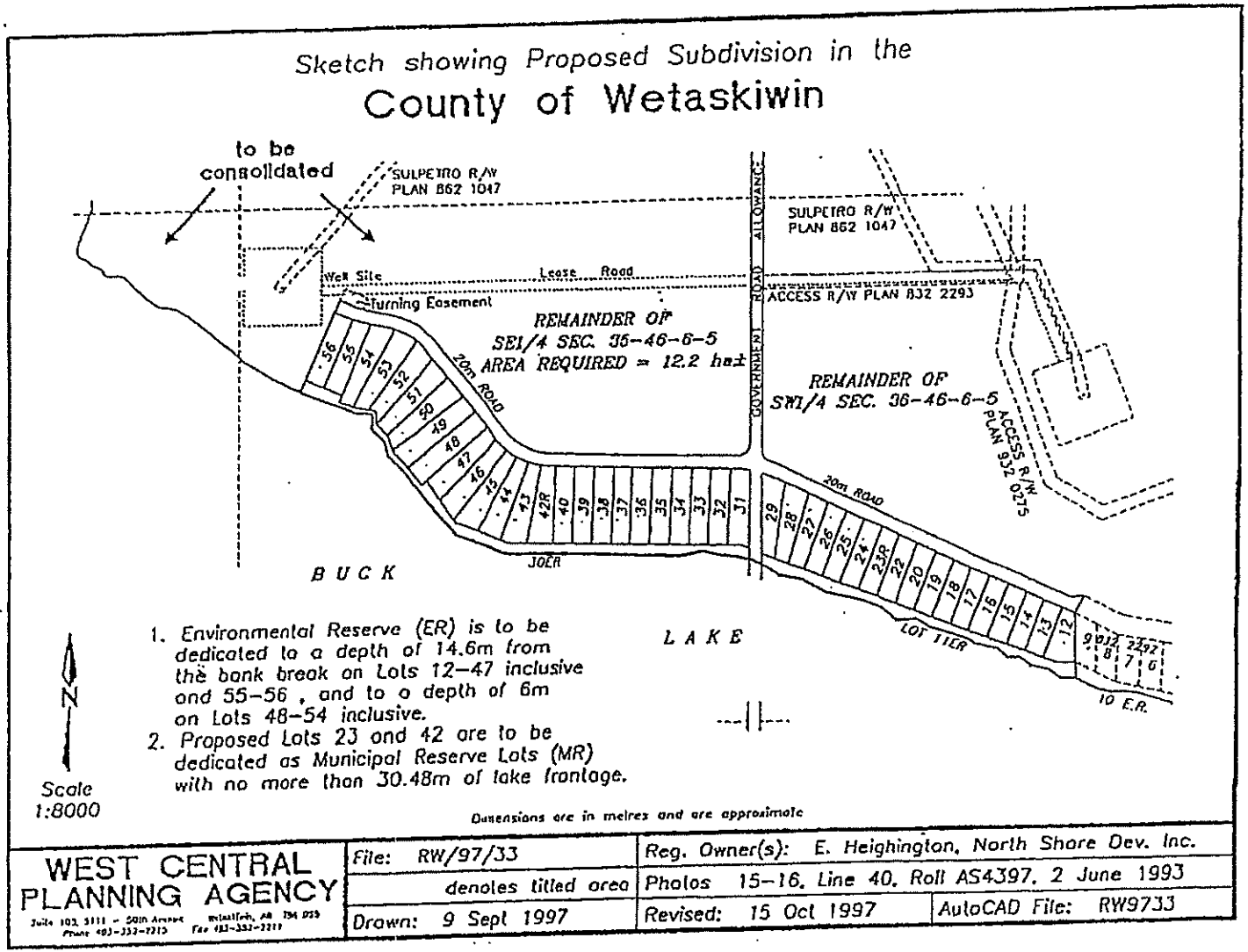
N

Sabatini Earth Technologies Inc.

Karen and Len Johnson

Alberta Environment map showing water wells within Oakes Bay vicinity

Drawn By: KJH . Date Jan. 2/03 Plate No: 5



Sabatini Earth Technologies Inc.

Karen and Len Johnston

Map of North Shore Developments (SE 35 & SW 36 - 46 - 6W5) showing planned lots

Drawn By: KJH | Date: Jan 2/02 | Plate No: 6

UNIVERSITY OF CALGARY

Centre for Toxicology

HMRB, University of Calgary
B19, 3330 Hospital Drive NW
Calgary, Alberta T2N 4N1
Tel: (403) 220-5511 Fax: (403) 270-2964

REPORT TO:
CROSSROADS REGIONAL HEALTH AUTHORITY
5610-40 AVE.
WETASKIWIN AB
T9A3E4

PRIVATE DRINKING WATER FROM:
DONALD HEIGHINGTON
1063 FALCONER ROAD
EDMONTON AB
T6R 2C9 (780) 434-7104

Land Description: SW-35-46-6-5
Collected: 10/3/2002 8:40:00 AM
By: DONALD HEIGHINGTON
Site: KITCHEN TAP
Source: Well
Depth: 128
Comments:

Req. ID No: T014918
Lab Code: 2002101514

CERTIFICATE OF CHEMICAL ANALYSIS

			CDW GUIDELINES (2001)
pH	8.49		6.5-8.5 units AO
Conductivity	1363	uS/cm	
Sodium	293.8	mg/L	≤ 200 mg/L AO
Potassium	1.24	mg/L	
Calcium	9.13	mg/L	
Magnesium	1.89	mg/L	
Total Hardness (CaCO3)(Calc)	30.58	mg/L	
Iron	0.02	mg/L	≤ 0.3 mg/L AO
Total Alkalinity (CaCO3)	439.7	mg/L	
Carbonate	19.4	mg/L	
Bicarbonate	496.8	mg/L	
Hydroxide	0	mg/L	
Chloride	0	mg/L	≤ 250 mg/L AO
Fluoride	0.5	mg/L	1.5 mg/L MAC
Nitrite (N)	0	mg/L	1.0 mg/L MAC
Nitrate (N)	0	mg/L	10 mg/L MAC
Sulfate	259.5	mg/L	≤ 500 mg/L AO
Total Dissolved Solids (Calc)	830.34	mg/L	≤ 500 mg/L AO
Cation Sum	13.42	mEq/L	
Anion Sum	14.24	mEq/L	
Ion Balance(Cation/Anion)	94.23	%	
Ion Balance (% Difference)	-2.87	%	

Comments:

Received: 10/8/2002
Reported: 10/18/2002
Certified By:

For: Siv Oman, PhD, DABFT
Director
Centre for Toxicology
(403) 220-5511

CROSSROADS REGIONAL HEALTH AUTHORITY RECEIVED OCT 24 2002 Per WETASKIWIN, ALBERTA

CDW = Canadian Drinking Water
AO = Aesthetic Objectives
MAC = Maximum Acceptable Concentration

Sabatini Earth Technologies Inc.

Karen and Len Johnson

Water chemistry report from well
on SW - 35 - 46 - 6W5

Drawn By: KJH | Date Jan. 2/03 | Plate No: 7

Attachment 12.5 Bacteriological Interpretation of Drinking Water from Well on Site

CROSSROADS HEALTH UNIT
Environmental Health

INTERPRETATION OF BACTERIOLOGICAL ANALYSIS OF DRINKING WATER

A. How to Interpret a Bacteriological Report

REPORT READS	INTERPRETATION
Total Coliform NIL Faecal Coliform NIL	SATISFACTORY: Your sample has shown that your water is safe to drink at this time. In order to ensure that it is safe in the future we recommend that you sample your water for bacteria once per year. To help you remember to do this we have enclosed a fridge magnet.
Total Coliform 1 to 10 Faecal Coliform NIL	DOUBTFUL: Bacteria found are considered non-harmful therefore water is safe to drink. However, as it is uncertain if the source of bacteria is from sampling technique, the tap or the well, immediate re-sampling is recommended. Two doubtfuls are considered unsatisfactory. Mark requisition form "*Previous Sample - Doubtful*"
Total Coliform more than 10 Faecal Coliform NIL	UNSATISFACTORY (Low Risk): Contamination is not likely to be of sewage origin but may be due to new construction or improperly sealed wells. Contamination may be coming from bacteria in soil or vegetation. Shock chlorinate the well and resample.
Total Coliform more than 10 Faecal Coliform more than 1.0	UNSATISFACTORY (High Risk): DO NOT DRINK! This water is contaminated and should not be consumed. First remove the source of contamination, then shock chlorinate and resample.
Background Growth.	DOUBTFUL: The general bacteria population has overgrown the sample and has prevented complete identification of microorganisms. This condition frequently occurs with new wells, dug wells which are not properly sealed, or wells which have been idle for some time Please resample. It is important to note on the requisition that this is a resample with the "PREVIOUS SAMPLE SHOWING BACKGROUND GROWTH" Two doubtfuls are considered unsatisfactory.
Heterotrophic Plate Count for chlorinated drinking water HPC less than 500	SATISFACTORY: The heterotophic plate count (HPC) is an estimate of the number of bacteria of all types present in a given sample. Large concentrations of general bacteria can hinder the detection of harmful bacteria. Generally this count is only completed on public water supplies. It is also used to determine the adequacy of chlorination in treated water such as municipal supplies.
HPC more than 500	DOUBTFUL: Should resample if it is a chlorinated public supply.

FOR FURTHER EXPLANATION PLEASE TURN OVER

Provincial Laboratory of Public Health
University of Alberta
Edmonton, Alberta T6G 2J2
Telephone: (780) 407 8911
FAX: (780) 407 8984

university of Alberta hospitals

Medical Microbiology Laboratory
Division of Clinical Microbiology
University of Alberta Hospitals
Edmonton, Alberta T6G 2B7
Telephone: (780) 407 7121

REPORT DESTINATION:	JOHNSON,LEN BOX 174 WINFIELD,ALBERTA (780)682-2066 T0C 2Y0 SE 1/4-36-46-6-WS Access #: ID #:N116609
CROSSROADS REGIONAL HEALTH AUTHORITY - WETASKIWIN HEALTH UNIT 5610 - 40th Avenue WETASKIWIN, AB T9A 3E4	Lab Spec #: E02W090202 Sample: PRIVATE DW Coll Site: Source: WELL City: WINFIELD,ALBERTA Coll(DMY): 18/12/2002 1230 Coll by: Recv(DMY): 19/12/2002 1302 Analyzed(DMY): 19/12/2002 Reported: 20/12/2002

Final Results

COLIFORM COUNT BY MEMBRANE FILTRATION per 100mL

TOTAL COLIFORMS	NIL
FAECAL COLIFORMS	NIL

Result Verified by: 257

Specimen Comments:

For further information contact the Health Unit or Agency.
It is important that the bottle be filled to the "Fill Line."
Please check box on requisition form to indicate whether sample is chlorinated or unchlorinated.