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Consulting Engineers

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MEMORANDUM

To: **Elfrida Community Builders Group Inc. c/o Hatim Jafferjee - Delta Urban**

E-mail: hatimj@deltaurban.com **Date:** March 5, 2025

File #: 23252

SUBJECT: **Decommissioning of Active gas well located 3150 Golf Club Road in Hamilton, Ontario** (the Site)

Elfrida Community Builders Group Inc. (ECBGI) and DeltaUrban retained Landtek completed the following report:

- Contaminate Overview Study Elfrida Secondary Plan Area, Hamilton, Ontario for Elfrida Community Builder's Group Inc. dated September 2023

The Contaminate Overview Study (COS) identified two natural gas wells of concerning:

- On-Site : One active natural gas well at 3150 Golf Club Road on the private property of Laura and Corrado Disabatino within the development area.

- Off-Site: One abandoned natural gas well at 333 Henderson Road on the private property west of the development area was plugged December 2011

Decommissioning of the Natural Gas Well

Decommissioning of the active natural gas well would be subject to the overall timing of the Secondary Plan and the ECBGI and/or the individual stake holder's development application. The natural gas well would be decommissioned prior to any development activities and would also be coordinated with any effort with surrounding lands to ensure that the well is decommissioned before any surrounding and impacted lands move forward with development.

Decommissioning of a natural gas well would be required to be completed by a licensed well driller in accordance with O.Reg. 903 *Section 21 - Abandonment* under the Ontario Water Resources Act, 1990.

I trust this is satisfactory for your purposes at this time.

Regards,
LANDTEK LIMITED

Paul Blunt. P.Eng., Q.P.ESA

Figure : Location Map
Attachment : 1. Gas Well information
2. O.Reg. 903- Abandonment

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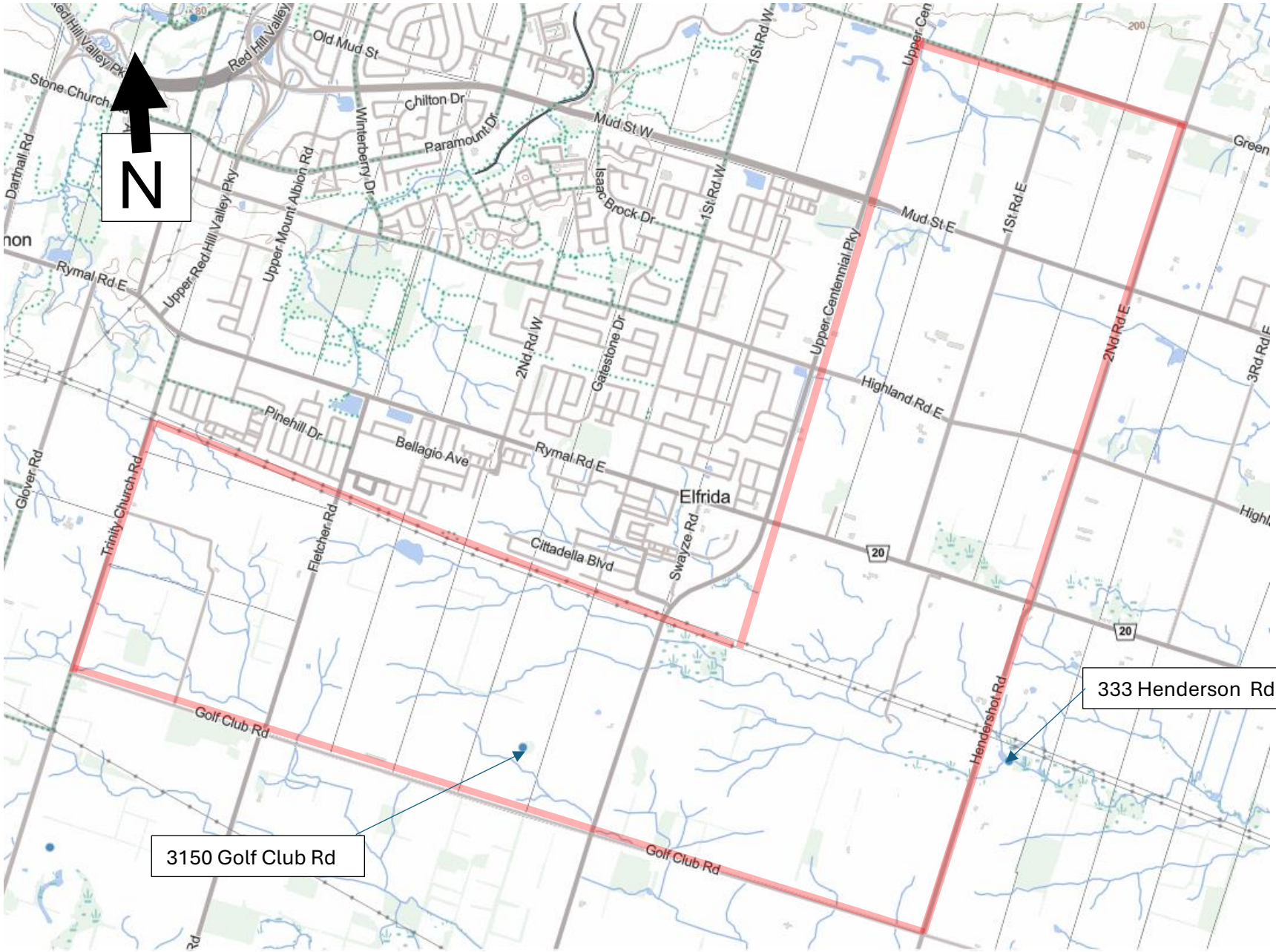
Figures



Location Map (gas wells)

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Attachment 1 : Gas well Information

	3150 Golf Club Road	**333 Henderson Road**
OGF_ID	179,562,430	179,571,652
WELL_ID	5776	11080
LICENCE_NUMBER	T008078	T008069
WELL_NAME	(private well)	(private well)
OPERATOR	(private operator)	(private operator)
WELL_TYPE	Private Gas Well	Private Gas Well
WELL_MODE	Active Well	Abandoned Well
SURFACE_LATITUDE_83	43.161	43.16
SURFACE_LONGITUDE_83	-79.794	-79.759
LOCATION_ACCURACY	Within 10 metres	Within 5 metres
GROUND_ELEVATION (m)	211.4	205.5
TOTAL_DEPTH (m)	100.2	72.8
VERTICAL_DEPTH (m)	100.2	72.8
COUNTY	Wentworth	Wentworth
TOWNSHIP	Binbrook	Binbrook
LOT	2B4	5B2
CONCESSION	I	I
SPUD_DATE	27-Oct-93	27-Nov-93
TOTAL_DEPTH_REACHED_DATE	12-Nov-93	19-Sep-94
PLUGGING_END_DATE		02-Dec-11

Water Stats After Test: CLEAR

3150 Golf Club Road - information from EcoLog Database

50 | 1 of 1 | SW/0.0 | 211.8 / 2.00 | PRIVATE BINBROOK 7-2B4-I | OOGW

Binbrook ON

Licence No:	T008078	**Well Compl:**	15636
Well ID:	5776	**County:**	Wentworth
Well Compl ID:	15636	**Block:**	7
W Class ID:	2367	**Lot:**	2B4
UWI Code:	T008078	**Conc:**	I
Permit Date:	1993-10-20	**Surface Lat NAD83:**	43.16106278
Depth(m):	100.20	**Surface Long NAD83:**	-79.79441556
Well Pool:	Haldimand Pool	**Bottom Lat NAD83:**	43.16106278
Completion Date:	NULL	**Bottom Long NAD83:**	-79.79441556
Depth Reached:	1993-11-13	**Lot Sides (m):**	369.90 N
Capped Date:	NULL	**E/W (m):**	134.40 W
Class ID:		**Latitude Nad27:**	
DB Source:		**Longitude Nad27:**	
Status as of:	August 2022	**bottom lat27:**	
Start Date:	1993-10-28	**bottom long27:**	
SPUD Date:	1993-10-28	**Lateral:**	No
Class:	NPW	**Accuracy:**	10
Grnd Elev:	211.40	**Method:**	Well Records (1954 to 1997)
KB Elev:	211.70	**Parent:**	NULL
TVD:	100.20	**Prod Top:**	69.10
PBTD:	NULL	**Prod Bot:**	NULL
TD Form:	Queenston	**PROPD Depth:**	100.00
Workover D:	NULL	**Location Method:**	Well Records (1954 to 1997)
Operator:	ref_3316772ce98dd8dc22015899f379f680	**Location Accuracy:**	Within 10 metres
Township:	Binbrook	**Dt Obtained:**	NULL
Target:	CLI	**Well Status Type:**	Private Gas Well
Classification:	NEW POOL WILDCAT	**Well Status Mode:**	Active Well

Well Name: PRIVATE BINBROOK 7-2B4-I

Target Desc: TARGETS WITHIN THE CLINTON AND CATARACT (OR MEDINA) GROUPS (WHIRLPOOL TO IRONDEQUOIT FORMATIONS INCLUSIVE)

Status Type Desc: A WELL USED BY THE LAND AND MINERAL RIGHTS OWNER TO PRODUCE GAS FROM A RESERVOIR FOR PRIVATE, NON-COMMERCIAL USE

Status Mode Desc: A WELL WHICH IS IN ACTIVE OPERATION IN ACCORDANCE WITH THE PURPOSE FOR WHICH IT IS LICENSED

Classification Desc: "EXPLORATORY WELL" MEANS A WELL THAT IS DRILLED FOR THE PURPOSE OF DISCOVERING A POOL

OF OIL OR GAS
Cement Rec: NULL
Comments: Accuracy verified by SEP Summer Students in 2011 using 2006 Orthos in PetroGIS.

Details

License No:	T008078	***Elevation (m):***	206.30
Geology Formation:	A-1 Carbonate	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	206.30 / 5.40
Top (m):	5.40		

License No:	T008078	***Elevation (m):***	206.30
Geology Formation:	Top of Bedrock	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	206.30 / 5.40
Top (m):	5.40		

License No:	T008078	***Elevation (m):***	142.60
Geology Formation:	Whirlpool	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	142.60 / 69.10
Top (m):	69.10		

License No:	T008078	***Elevation (m):***	176.40
Geology Formation:	Rochester	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	FORM 7	***Elevatn / Top (m):***	176.40 / 35.30
Top (m):	35.30		

License No:	T008078	***Elevation (m):***	NULL
Geology Formation:	A-0 Unit	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	NULL / NULL
Top (m):	NULL		

License No:	T008078	***Elevation (m):***	NULL
Geology Formation:	A-1 Evaporite	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	NULL / NULL
Top (m):	NULL		

License No:	T008078	***Elevation (m):***	NULL
Geology Formation:	Decew	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	NULL / NULL
Top (m):	NULL		

License No:	T008078	***Elevation (m):***	171.10
Geology Formation:	Rochester	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	171.10 / 40.60
Top (m):	40.60		

License No:	T008078	***Elevation (m):***	156.80
Geology Formation:	Grimsby	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	FORM 7	***Elevatn / Top (m):***	156.80 / 54.90
Top (m):	54.90		

License No:	T008078	***Elevation (m):***	150.80
Geology Formation:	Cabot Head	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	FORM 7	***Elevatn / Top (m):***	150.80 / 60.90
Top (m):	60.90		

License No:	T008078	***Elevation (m):***	156.80
Geology Formation:	Grimsby	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	156.80 / 54.90
Top (m):	54.90		

License No:	T008078	***Elevation (m):***	163.60
Geology Formation:	Irondequoit	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	163.60 / 48.10
Top (m):	48.10		

License No:	T008078	***Elevation (m):***	137.90
Geology Formation:	Queenston	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	FORM 7	***Elevatn / Top (m):***	137.90 / 73.80
Top (m):	73.80		

License No:	T008078	***Elevation (m):***	150.80
Geology Formation:	Cabot Head	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	150.80 / 60.90
Top (m):	60.90		

License No:	T008078	***Elevation (m):***	182.20
Geology Formation:	Goat Island	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	182.20 / 29.50
Top (m):	29.50		

License No:	T008078	***Elevation (m):***	NULL
Geology Formation:	Lions Head	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	NULL / NULL
Top (m):	NULL		

License No:	T008078	***Elevation (m):***	NULL
Geology Formation:	Wiarton/Colpoy Bay (Amabel)	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	NULL / NULL
Top (m):	NULL		

License No:	T008078	***Elevation (m):***	211.40
Geology Formation:	Drift	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	FORM 7	***Elevatn / Top (m):***	211.40 / 0.30
Top (m):	0.30		

License No:	T008078	***Elevation (m):***	163.60
Geology Formation:	Irondequoit	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	FORM 7	***Elevatn / Top (m):***	163.60 / 48.10
Top (m):	48.10		

License No:	T008078	***Elevation (m):***	206.30
Geology Formation:	Top of Bedrock	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	FORM 7	***Elevatn / Top (m):***	206.30 / 5.40
Top (m):	5.40		

License No:	T008078	***Elevation (m):***	n/a
Geology Formation:	Drift	***Static Level (m):***	4.50
Type of Water:	Fresh	***Geology/Water:***	Water
Source:	n/a	***Elevatn / Top (m):***	n/a / 5.00
Top (m):	5.00		

333 Henderson Road - Ecolog ERIS Information (Abandoned Well)

506 1 of 1 ESE/174.0 203.8 / -6.00 PRIVATE BINBROOK 4-5B2-I OOGW

Binbrook ON

Licence No:	T008069	**Well Compl:**	15630
Well ID:	11080	**County:**	Wentworth
Well Compl ID:	15630	**Block:**	4
W Class ID:	2367	**Lot:**	5B2
UWI Code:	T008069	**Conc:**	I
Permit Date:	1993-09-23	**Surface Lat NAD83:**	43.16032583
Depth(m):	72.80	**Surface Long NAD83:**	-79.75867611
Well Pool:	Haldimand Pool	**Bottom Lat NAD83:**	43.16032583
Completion Date:	NULL	**Bottom Long NAD83:**	-79.75867611
Depth Reached:	1994-09-20	**Lot Sides (m):**	919.50 S
Capped Date:	2011-12-03	**E/W (m):**	176.80 E
Class ID:		**Latitude Nad27:**	
DB Source:		**Longitude Nad27:**	
Status as of:	August 2022	**bottom lat27:**	
Start Date:	1993-11-28	**bottom long27:**	
SPUD Date:	1993-11-28	**Lateral:**	No

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Class:	NPW	**Accuracy:**	5
Grnd Elev:	205.50	**Method:**	Orthophotography
KB Elev:	205.50	**Parent:**	NULL
TVD:	72.80	**Prod Top:**	66.00
PBTD:	NULL	**Prod Bot:**	67.00
TD Form:	Whirlpool	**PROPD Depth:**	72.80
Workover D:	NULL	**Location Method:**	Orthophotography
Operator:	ref_c8e174cd45d369fd366855df83edb6cc	**Location Accuracy:**	Within 5 metres
Township:	Binbrook	**Dt Obtained:**	2011-11-28 15:34:33
Target:	CLI	**Well Status Type:**	Private Gas Well
Classification:	NEW POOL WILDCAT	**Well Status Mode:**	Abandoned Well

Well Name: PRIVATE BINBROOK 4-5B2-I
Target Desc: TARGETS WITHIN THE CLINTON AND CATARACT (OR MEDINA) GROUPS (WHIRLPOOL TO IRONDEQUOIT FORMATIONS INCLUSIVE)
Status Type Desc: A WELL USED BY THE LAND AND MINERAL RIGHTS OWNER TO PRODUCE GAS FROM A RESERVOIR FOR PRIVATE, NON-COMMERCIAL USE
Status Mode Desc: A WELL WHICH IS OFFICIALLY PLUGGED AND ABANDONED
Classification Desc: "EXPLORATORY WELL" MEANS A WELL THAT IS DRILLED FOR THE PURPOSE OF DISCOVERING A POOL OF OIL OR GAS
Cement Rec: NULL
Comments: Lat/Long by A.Castillo (Petroleum GIS Staff) using Orthos and Inspection Pictures in PetroGIS.

Details

License No:	T008069	**Elevation (m):**	150.10
Geology Formation:	Cabot Head	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	FORM 7	**Elevatn / Top (m):**	150.10 / 55.40
Top (m):	55.40		

License No:	T008069	**Elevation (m):**	137.30
Geology Formation:	Queenston	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	FORM 7	**Elevatn / Top (m):**	137.30 / 68.20
Top (m):	68.20		

License No:	T008069	**Elevation (m):**	140.90
Geology Formation:	Whirlpool	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	FORM 7	**Elevatn / Top (m):**	140.90 / 64.60
Top (m):	64.60		

License No:	T008069	**Elevation (m):**	143.00
Geology Formation:	Cabot Head	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	MNR	**Elevatn / Top (m):**	143.00 / 62.50
Top (m):	62.50		

License No:	T008069	**Elevation (m):**	200.70
Geology Formation:	Top of Bedrock	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	FORM 7	**Elevatn / Top (m):**	200.70 / 4.80
Top (m):	4.80		

License No:	T008069	**Elevation (m):**	161.30
Geology Formation:	Gasport	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	MNR	**Elevatn / Top (m):**	161.30 / 44.20
Top (m):	44.20		

License No:	T008069	**Elevation (m):**	138.40
Geology Formation:	Manitoulin	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	MNR	**Elevatn / Top (m):**	138.40 / 67.10
Top (m):	67.10		

License No:	T008069	**Elevation (m):**	205.49
Geology Formation:	Drift	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	FORM 7	**Elevatn / Top (m):**	205.49 / 0.01
Top (m):	0.01		

License No:	T008069	**Elevation (m):**	158.30
Geology Formation:	Decew	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	MNR	**Elevatn / Top (m):**	158.30 / 47.20
Top (m):	47.20		

License No:	T008069	**Elevation (m):**	161.00
Geology Formation:	Irondequoit	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	FORM 7	**Elevatn / Top (m):**	161.00 / 44.50
Top (m):	44.50		

License No:	T008069	**Elevation (m):**	133.50
Geology Formation:	Whirlpool	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	MNR	**Elevatn / Top (m):**	133.50 / 72.00
Top (m):	72.00		

License No:	T008069	**Elevation (m):**	146.10
Geology Formation:	Thorold	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	MNR	**Elevatn / Top (m):**	146.10 / 59.40
Top (m):	59.40		

License No:	T008069	**Elevation (m):**	205.50
Geology Formation:	Drift	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	MNR	**Elevatn / Top (m):**	205.50 / 0.00
Top (m):	0.00		

License No:	T008069	**Elevation (m):**	200.70
Geology Formation:	Guelph	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	MNR	**Elevatn / Top (m):**	200.70 / 4.80
Top (m):	4.80		

License No:	T008069	**Elevation (m):**	147.80
Geology Formation:	Irondequoit	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	MNR	**Elevatn / Top (m):**	147.80 / 57.70
Top (m):	57.70		

License No:	T008069	**Elevation (m):**	200.70
Geology Formation:	Top of Bedrock	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	MNR	**Elevatn / Top (m):**	200.70 / 4.80
Top (m):	4.80		

License No:	T008069	**Elevation (m):**	154.60
Geology Formation:	Grimsby	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	FORM 7	**Elevatn / Top (m):**	154.60 / 50.90
Top (m):	50.90		

License No:	T008069	**Elevation (m):**	173.20
Geology Formation:	Rochester	**Static Level (m):**	n/a
Type of Water:	n/a	**Geology/Water:**	Geology
Source:	FORM 7	**Elevatn / Top (m):**	173.20 / 32.30
Top (m):	32.30		

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

License No:	T008069	***Elevation (m):***	180.60
Geology Formation:	Eramosa	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	180.60 / 24.90
Top (m):	24.90		

License No:	T008069	***Elevation (m):***	NULL
Geology Formation:	Lions Head	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	NULL / NULL
Top (m):	NULL		

License No:	T008069	***Elevation (m):***	n/a
Geology Formation:	Eramosa	***Static Level (m):***	4.00
Type of Water:	Fresh	***Geology/Water:***	Water
Source:	n/a	***Elevatn / Top (m):***	n/a / 9.00
Top (m):	9.00		

License No:	T008069	***Elevation (m):***	200.70
Geology Formation:	Eramosa	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	FORM 7	***Elevatn / Top (m):***	200.70 / 4.80
Top (m):	4.80		

License No:	T008069	***Elevation (m):***	176.00
Geology Formation:	Goat Island	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	176.00 / 29.50
Top (m):	29.50		

License No:	T008069	***Elevation (m):***	157.50
Geology Formation:	Rochester	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	157.50 / 48.00
Top (m):	48.00		

License No:	T008069	***Elevation (m):***	NULL
Geology Formation:	Wiarton/Colpoy Bay (Amabel)	***Static Level (m):***	n/a
Type of Water:	n/a	***Geology/Water:***	Geology
Source:	MNR	***Elevatn / Top (m):***	NULL / NULL
Top (m):	NULL		

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Attachment 2 : O.Reg 903 - Abandonment

O.Reg. 903 – Abandonment (taken from the Regulation)

21. (1) A person constructing a new well that is discontinued before completion of the well's structural stage shall immediately abandon the well. O. Reg. 372/07, s. 20.

(2) The well purchaser of a new well that is dry shall immediately abandon the well unless the owner of the land on which the well is situated agrees in writing to maintain the well for future use as a well. O. Reg. 372/07, s. 20.

(3) The well owner shall immediately abandon the well if it is not being used or maintained for future use as a well. O. Reg. 372/07, s. 20.

(4) If a well produces mineralized water, the well owner shall immediately abandon the well. O. Reg. 372/07, s. 20.

(5) If a well produces water that is not potable, the well owner shall immediately abandon the well unless the well owner seeks the advice of and takes such measures directed by the local medical officer of health. O. Reg. 372/07, s. 20.

(6) If a well contains natural gas or other gas, the well owner shall immediately abandon the well unless measures are taken to manage the gas in a way that prevents any potential hazard. O. Reg. 372/07, s. 20.

(7) If a well permits any movement of natural gas, contaminants or other materials between subsurface formations, or between a subsurface formation and the ground surface, and the movement may impair the quality of any waters, the well owner shall immediately abandon the well unless measures are taken that prevent the movement at all times. O. Reg. 372/07, s. 20.

(8) If a well is constructed in contravention of any provision of this Regulation dealing with the location of wells, the methods and materials used in the construction of wells or the standards of well construction, the well owner shall immediately take steps to rectify the situation, but if those steps fail, the owner shall immediately abandon the well. O. Reg. 372/07, s. 20.

(9) The well owner shall ensure that measures taken pursuant to subsections (5) to (7) are functional at all times. O. Reg. 372/07, s. 20.

(10) Subsections (4) to (8) do not apply if the well owner has the written consent of the Director. O. Reg. 372/07, s. 20.

(11) Subsections (4) and (5) do not apply to a test hole or dewatering well. O. Reg. 372/07, s. 20.

(12) Subsections (4) and (5) do not apply to a well that,

(a) is used or intended for use as a source of water for agriculture; and

(b) is not used as a source of water for human consumption. O. Reg. 372/07, s. 20.

(13) The person abandoning the well shall retain the services of the holder of a well contractor licence, and shall ensure that the contract between them requires a well technician licensed to construct the type of well that is being abandoned to be used to abandon the well, unless,

(a) the person who works on the abandonment of the well is the owner of the land or is a member of the owner's household;

(b) the person who works on the abandonment of the well is working without remuneration for another person on land owned by the other person or by a member of the other person's household;

(c) the person who works on the abandonment of the well holds a licence referred to in paragraph 1 of subsection 5 (1); or

(d) the well is a test hole or dewatering well, the well is abandoned by a method that does not use powered equipment, and the person who works on the abandonment of the well is,

(i) a person who holds a licence referred to in paragraph 5 of subsection 5 (1), or

(ii) a person referred to in paragraph 1, 2 or 3 of section 1.0.3. O. Reg. 372/07, s. 20.

21.1 (1) If a well is abandoned, the person abandoning the well shall ensure that the following steps are taken and, unless otherwise specified, they shall be taken in the sequence in which they are set out in this subsection:

1. If the well already has a well tag, the well tag shall be removed and returned to the Director within 30 days after its removal.

2. If the well casing or well screen has collapsed, reasonable efforts shall be made to remove it, and all other equipment and debris in the well shall be removed.

3. The well, including any annular space, shall be plugged by,

i. in the case of any well, placing a continuous column of an abandonment barrier from the bottom of the well upward to approximately two metres below the ground surface so that it prevents any movement of water, natural gas, contaminants or other material between subsurface formations or between a subsurface formation and the top of the abandonment barrier, or

ii. in the case of a well that is greater than 65.0 centimetres in diameter, placing a continuous column of an abandonment barrier by taking the steps described in subsection (5) until the materials placed in the well under that subsection reach to approximately two metres below the ground surface.

4. If a well casing or well screen was not removed under paragraph 2, it shall be removed, where reasonably possible, during the taking of the steps required by paragraph 3, with the bottom of the casing immersed in the rising accumulation of the abandonment barrier until the required level has been reached.

5. If a well casing or well screen was not removed under paragraph 2 or 4, it shall be removed, where reasonably possible, to a minimum depth of two metres below the ground surface.

6. If an abandonment barrier placed under paragraph 3 contains cement, it shall be allowed to set until firm and, if necessary, it shall be topped up to approximately two metres below the ground surface.

7. Unless to do so may cause remaining structures to be destabilized, damaged or unsafe, below ground concrete structures, foundations and slabs shall be removed, at any time before the steps

required by paragraph 8 are taken, at least to a depth adequate to accommodate the sealing measures described in paragraph 8.

8. The well shall be sealed at the ground surface by,

i. placing between 50 and 150 centimetres in vertical thickness of bentonite chips, pellets, granules or powder in the well opening in accordance with the manufacturer's specifications, and

ii. fill the remaining well opening to the ground surface with soil cover, or other material that is more in keeping with the surface material immediately adjacent to the well opening, to prevent inadvertent or unauthorized access.

9. The disturbed area shall be stabilized to prevent erosion. O. Reg. 372/07, s. 20.

(2) Paragraphs 2, 4 and 5 of subsection (1) do not apply to a person who abandons a well by overdrilling the entire well. O. Reg. 372/07, s. 20.

(3) The following rules apply for the purpose of subparagraphs 3 i and ii of subsection (1):

1. The abandonment barrier must be compatible with the quality of the water found in the well.

2. The abandonment barrier must not contain any materials that may impair the integrity of the abandonment barrier, including soil or drill cuttings.

3. If the well is in contact with contaminants, the abandonment barrier must be stable in the presence of the contaminants.

4. If the well is less than or equal to 6.5 centimetres in diameter and the well casing and well screen have been removed under paragraph 2 of subsection (1) or are being removed under paragraph 4 or 5 of subsection (1), the abandonment barrier must be,

i. a slurry consisting of clean water, Portland cement and not more than 5 per cent bentonite solids by weight, or

ii. a slurry consisting of clean water and at least 20 per cent bentonite solids by weight, and the abandonment barrier must be placed using a tremie pipe, with the bottom of the tremie pipe immersed in the rising accumulation of the abandonment barrier until the required level has been reached.

5. Paragraph 4 also applies, with necessary modifications, to an uncased well that is less than or equal to 6.5 centimetres in diameter.

6. If the well is less than or equal to 6.5 centimetres in diameter and the well casing and well screen have not been removed under paragraph 2 of subsection (1) and are not being removed under paragraph 4 or 5 of subsection (1), the abandonment barrier must be,

i. a slurry consisting of clean water, Portland cement and not more than 5 per cent bentonite solids by weight, or

ii. bentonite chips or pellets that have been screened and placed in accordance with the manufacturer's specifications.

7. If the well is more than 6.5 centimetres in diameter, the abandonment barrier must be,

i. a slurry consisting of clean water and at least 20 per cent bentonite solids by weight,

ii. a slurry consisting of clean water, Portland cement and not more than 5 per cent bentonite,

iii. a slurry consisting of clean water and Portland cement,

iv. a slurry consisting of clean water, Portland cement and clean sand,

v. a slurry consisting of equal weights of Portland cement and clean gravel, mixed with clean water,

vi. a slurry (sometimes called a concrete slurry) consisting of clean water, Portland cement, clean sand and clean gravel,

vii. bentonite chips or pellets that have been screened and placed in accordance with the manufacturer's specifications, or

viii. other material approved in writing by the Director, if the Director is of the opinion that the performance of the other material is the equivalent of the performance of a slurry referred to in subparagraphs i to vi.

8. A wet abandonment barrier for a well that is more than 6.5 centimetres in diameter shall be placed using a tremie pipe, with the bottom of the tremie pipe immersed in the rising accumulation of the abandonment barrier until the required level has been reached. O. Reg. 372/07, s. 20.

(4) Subparagraph 3 i of subsection (1) and subsection (3) do not prevent the placing of clean, washed sand or gravel in the well bore, adjacent to water producing zones or fractures, to minimize the loss of sealant material. O. Reg. 372/07, s. 20.

(5) The steps referred to in subparagraph 3 ii of subsection (1) with respect to a well that is greater than 65.0 centimetres in diameter, which shall be taken in the sequence in which they are set out in this subsection, are the following:

1. Clean sand or pea gravel shall be placed from the bottom of the well to the top of the deepest water producing zone or the top of the well screen, whichever is deeper.

2. At least 0.1 metre of bentonite chips or pellets shall be placed over the sand or pea gravel.

3. If the water level can be drawn down to the top of the bentonite chips or pellets,

i. the water level shall be drawn down to the top of the bentonite chips or pellets,

ii. at least 0.3 metres of a bentonite slurry that consists of clean water and at least 20 per cent bentonite solids and that is compatible with the quality of the water found in the well shall be placed over the bentonite chips or pellets, and

iii. clean gravel, sand, silt or clay shall be dropped over the bentonite slurry to fill the remainder of the well, while maintaining at least 0.3 metres of the bentonite slurry above the rising accumulation of gravel, sand, silt or clay.

4. If the water level cannot be drawn down to the top of the bentonite chips or pellets, the remainder of the well shall be filled to approximately two metres below the ground surface with an abandonment barrier, which may be interspersed with clean sand or pea gravel placed in each water producing zone of the well. O. Reg. 372/07, s. 20.

(6) If the well is greater than 65.0 centimetres in diameter, the person abandoning the well shall ensure that sealing materials are selected and placed for the purpose of paragraphs 3 and 8 of subsection (1) so that they will provide the appropriate structural strength to support the weight of persons and vehicles that may move over the area after it is filled. O. Reg. 372/07, s. 20.

(7) If the well is a flowing well, commercially manufactured drilling mud that does not impair the quality of the water with which it comes in contact may be used, in taking the steps required by subsection (1), to assist with drilling or placement of an abandonment barrier, but the drilling mud may not be used as an abandonment barrier. O. Reg. 372/07, s. 20.

(8) Paragraphs 2 to 9 of subsection (1) and subsections (3) to (7) do not apply to a person who abandons a well by excavation of the entire well in the course of work carried out for another purpose. O. Reg. 372/07, s. 20.

(9) This section also applies, with necessary modifications, to a well pit and, for that purpose, a reference in subsections (1) to (8) to a well shall be deemed to be a reference to a well pit. O. Reg. 372/07, s. 20.