

Station: NEW-FM

Studio Location: TORONTO, ONTARIO

TECHNICAL BRIEF

Preparation Date: June 30, 2010

APPLICANT: A. FITZROY GORDON, OBCI

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SUMMARY SHEET

APPLICANT:	A. FITZROY GORDON, OBCI
STATION CALL:	NEW-FM
STATION LOCATION:	TORONTO, ONTARIO
GEOGRAPHICAL COORDINATES:	LATITUDE 43° 38' 56" NORTH LONGITUDE 79° 22' 54" WEST
TRANSMITTER POWER:	852 WATTS
TRANSMISSION LINE EFFICIENCY:	58.1%
ANTENNA TYPE:	TWO BAY DIRECTIONAL PANEL
POWER GAIN:	2.02X (3.05 dB) MAXIMUM 0.9X (-0.45 dB) AVERAGE
POLARIZATION:	CIRCULAR
ANTENNA BEAM TILT AND NULL FILL:	ZERO
EFFECTIVE RADIATED POWER:	1000 WATTS (MAXIMUM) 446 WATTS (AVERAGE)
EFFECTIVE HEIGHT ABOVE AVERAGE TERRAIN:	276.8 METRES
CHANNEL NUMBER:	254
FREQUENCY:	98.7 MHz
CLASS OF ASSIGNMENT:	B1
EMISSION:	256 KF8EHF (STEREO)

TECHNICAL BRIEF

1 - INTRODUCTION

This engineering brief has been prepared on behalf of A. Fitzroy Gordon, OBCI (Gordon). It is in support of his application for a new FM station to serve Toronto and the surrounding area. It was prepared in accordance with Broadcast Procedures and Rules Parts I and III.

2 - BACKGROUND INFORMATION

In 2005 Gordon applied to the CRTC and Industry Canada for a license to operate a new FM radio station in Toronto, Ontario. The proposed frequency of 98.7 MHz is second adjacent to CBLA-FM, Toronto. Co-siting with CBLA was proposed to minimize the risk of interference. The use of second adjacent frequencies to serve the same market is a special case under Industry Canada's rules and usually requires the agreement of the affected incumbent station. The CBC objected to the use of 98.7 MHz due to the second adjacent relationship with CBLA and as a result Gordon's application received approval in part which was conditional on him finding an acceptable alternate frequency.

Because of the lack of a suitable alternative frequency Gordon has continued to pursue the second adjacent concept through discussions and meetings with CBC and Industry Canada. Eventually, Industry Canada decided that the second adjacency issue could be resolved using test transmissions to prove that the new station will not cause unacceptable interference to CBLA. These were undertaken between May 31 and June 21, 2010. Measurements and listening tests were made by D.E.M. Allen and Associates and are described in their report dated June 25, 2010. These show that there is no

interference to CBLA and that the new station will provide satisfactory service to most of its target coverage area.

3 - PURPOSE

The purpose of this application is to re-apply for the 98.7 MHz frequency which was denied by the CRTC. The proposed facilities are identical to those used for the test transmissions and are also very similar to those proposed in 2005.

4 - CHANNEL SELECTION

The previously proposed frequency of 98.7 MHz (254B1) remains the best available and most viable possibility.

5 - SITE SELECTION

The proposed station must be co-sited with CBLA to minimize the risk of interference. It is located on the northerly rooftop mast of First Canadian Place. Gordon's antenna was installed on the new Rogers tower at the south end of the roof. The antenna is located near the nulls in CBLA's horizontal and vertical antenna patterns which improves the isolation between the two stations and reduces the risk of intermodulation.

6 - PROTECTION ANALYSIS

As shown on Table 1, NEW-FM is short spaced to eight stations. These are protected as shown on Table 2 and Figure 5. The protection of specific stations is discussed as follows:

CBCB-FM

As shown on Figure 5-2 protection of CBCB's 0.5 mV/m contour is proposed instead of the 86 km radius normally required for an unlimited class C1 assignment. This

is justified by a number of factors. It is in compliance with Industry Canada's new rules which will come into effect in 2011, it is similar to the protection afforded CBCB by CBCP, the area affected is sparsely populated and receives duplicate Radio One coverage from CBCO-FM and CBLA-FM-4. CBLA-FM may also provide some useful service to the area.

CBCP-FM

An interference limitation area within CBCP's 0.5 mV/m contour is proposed, as shown by the green line on Figure 5-3. Justification for this is provided by the fact that part of the affected area is already subject to co-channel interference from CBCB and all of the area receives duplicate Radio One coverage from CBLA. Although the programming on CBLA is not exactly identical to that on CBCP it is likely that it would be preferred by listeners in the area because most of them are well within the Greater Toronto Area (GTA) and so would find the Toronto Radio One service of more interest to them. In addition, CBLA provides a stronger signal than CBCP throughout the affected area, as shown by the red CBLA:CBCP = 1:1 contour on Figure 5-3. The combination of a stronger, more reliable signal and more relevant programming very likely makes CBLA the preferred Radio One station for listeners in the area where CBCP's coverage will be affected by Gordon's proposal. Finally, we note that during the three week test period the applicant received no complaints that he was interfering with CBCP

The protection proposed for CBCB and CBCP was outlined to CBC in a pre-coordination report that was sent to them in October 2009. The antenna pattern proposed in that report was slightly different than the one assumed herein and provided less protection to both stations. They did not reply to that report but did respond to a second

coordination notice that was sent to them prior to the start of testing. In that response they objected to the proposed facilities claiming that they would interfere with CBCB, CBCP and CBLA. They also raised concerns about Safety Code 6 issues at the transmitter site. The design of the test and currently proposed facilities was finalized based on there being no objection received from the CBC to our October 2009 pre-coordination report.

CKWR-FM

A small adjacent channel interference zone is proposed within CKWR's 0.5 mV/m contour. However, it is unlikely to have any impact on CKWR's coverage because it will be located within a much larger zone of co-channel interference from WKSE, as shown on Figure 5-4. CKWR did not object when this proposal was coordinated with them in 2005. The current pattern provides slightly more protection than that proposed in 2005. They were notified of the test transmissions and have advised us that they have received no interference complaints during the test period.

WKSE, CHCD-FM AND WBZA

These adjacent channel stations will be protected as shown on Figure 5-1 and Table 2-6.

CBLA-FM

The signal strengths of NEW-FM and CBLA are compared on Figure 5-5. As predicted, CBLA's signal will be at least 20 dB more than NEW-FM's throughout most of the coverage area, except west towards Brampton where the difference will be approximately 19 dB and in CBLA's southeasterly null where the difference will be 15 dB. All of these values are well in excess of the minimum D/U ratio for second adjacent

protection of -26 dB specified in BPR-3. Therefore, there is little likelihood of NEW-FM interfering with CBLA. However, the large signal differential may result in interference to NEW-FM from CBLA on some receivers. The applicant acknowledges and accepts this risk.

As mentioned previously, test transmissions were undertaken to verify protection of CBLA. These included listening tests on a representative sample of receivers at various locations throughout the greater Toronto area. The results are shown in the June 28, 2010 report by D.E.M. Allen and Associates. No cases of interference to CBLA were found by this independent investigator .

CKLN-FM

The proposed frequency has an IF relationship with CKLN. The department no longer recognizes this type of interference.

The proposed frequency is 0.6 MHz or three channels from that of CHFI-FM, Toronto. As shown on Figure 5-6 the 100 dBuV/m contour of NEW-FM will be completely within both the 100 and 80 dBuV/m contours of CHFI, easily complying with the recommendations of BPR-3 and making interference to CHFI very unlikely. CHFI's 100 dBuV/m contour will extend beyond NEW-FM's 80 dBuV/m contour in some areas which may result in interference to NEW-FM. The applicant recognizes and accepts this risk. No cases of interference to CHFI were found by D.E.M. Allen during the test transmissions.

7 - SOURCES OF INFORMATION

The HAAT's were derived from those notified for CBLA-FM and are included herein on Table 3-1. Related allotments and assignments were downloaded from Industry Canada's web site on February 4, 2010.

The following map sheets were used for plotting contours:

<u>Scale</u>	<u>Title</u>	<u>Number</u>
1:50,000	Toronto	30M/11
1:250,000	Toronto Lake Simcoe	30M 31D

8 - TRANSMITTING SYSTEM

The main and standby transmitters are Nautel V1-AD models. Both are type approved and certified by Industry Canada.

The transmission line is 63 m of Andrew 7/8" diameter HJ5-50 cable. Its loss of 1.207 dB/100 m at 98.7 MHz plus 0.1 dB connector losses will result in an overall line loss of 0.86 dB. The feed system will include a Sira CFM4-2.5 bandpass filter and Channel Microwave BV146-987 circulator to reduce the risk of intermodulation. The combined insertion loss of the filter and circulator is 1.5 dB resulting in an overall feed system loss of 2.36 dB and an efficiency of 58.1%.

The antenna is a two bay directional, circularly polarized, panel type Sira FMC-05/6. The horizontal and vertical patterns are shown on Figure 2. The horizontal pattern shown on Figure 2-1 has been certified by the manufacturer. It was designed to meet protection requirements and roughly duplicate that of CBLA to provide a similar D/U ratio in all directions. The current Sira pattern is compared to the original Kathrein pattern

on Figure 2-2. It is generally within 1 dB of the original pattern and provides slightly better protection to other stations. The vertical pattern has no beam tilt or null fill. The antenna gain is 3.05 dB or 2.02 times, maximum and -0.45 dB or 0.9 times, average.

ERP = TX output x line efficiency x antenna gain

$$= 852 \times 0.581 \times 2.02 \quad = 852 \times 0.581 \times 0.9$$

$$= 1000 \text{ W (Maximum)} \quad = 446 \text{ W (Average)}$$

9 - DETERMINATION OF SERVICE CONTOUR LOCATIONS

Distances to the median field strength service contours were calculated in accordance with Section C-3 of BPR-III and are shown on Table 3. The contour map is included as Figure 6.

10 - AREA TO BE SERVED

Primary or 3 mV/m smooth earth predicted service will extend for an average radius of 13.9 kilometres. It will enclose all of the city of Toronto except Scarborough and northwest Etobicoke. It will generally provide satisfactory reception on simple built-in antennas.

Secondary or 0.5 mV/m service will extend for an average radius of 32.7 kilometres enclosing Toronto, Markham, Richmond Hill, Vaughan, Brampton, Mississauga and Oakville. It will generally provide satisfactory service on simple rooftop antennas, except where limited by interference from other stations, as shown on Figure 6. The test transmissions showed the reception in these areas to be better than predicted, particularly to the north and west. However, in accordance with BPR-3 C-2.3.4, it is acknowledged that the applicant does not intend to serve these limitation areas.

The coverage that has been achieved is the best possible at this time. However, some important parts of the applicant's potential market are not well served, particularly Scarborough. Therefore, the applicant intends to improve the availability of the station's programming through cable and internet carriage and will pursue opportunities to improve the coverage as they become available through regulatory and technological developments.

11 - POTENTIAL INTERFERENCE TO OTHER RADIO STATIONS

The high field strength contours, 115 dB μ (0.562 V/m) and 100 dB μ (0.1 V/m), were calculated to assess the potential for receiver overloading. As a result of the great antenna height the 115 dB μ V/m contour is not developed at ground level and the 100 dB μ V/m would be reduced in extent. However, in light of the many tall buildings in the area both contours have been calculated without taking into account the antenna's vertical pattern. The contours are shown on Figure 2. Distances to and estimated populations within the various contours, are as follows:

<u>FIELD STRENGTH</u> <u>dBμ</u>	<u>MAXIMUM DISTANCE</u> <u>Kilometres</u>	<u>POPULATIONS*</u>	<u>HOUSEHOLDS*</u>
115	0.4	420	290
100	2.0	44,600	28,400
70 (3 mV/m)	18.8	1,604,000	728,000
Limitation	33.0	2,360,000	1,000,000
54 (0.5 mV/m)	42.8	4,433,000	1,659,000

* obtained from 2006 Census; Statistics Canada Data.

The many broadcast stations at and near the proposed site result in a very large number of potential intermodulation products. The proposed station is unlikely to have a significant impact on this existing situation due to its relatively low power and the effectiveness of the bandpass filter and circulator. This was borne out during the test transmissions by measurements made by GS Broadcast Technical Services and Industry Canada which found the emissions to be within the Department's specified limits.

The second harmonic of 98.7 MHz is 197.4 MHz which falls within television channel 10, which does not serve the area.

12 - RADIATION EXPOSURE

NEW-FM is located on the roof of First Canadian Place with ten other FM stations, three TV stations and numerous telecommunications antennas. The resulting site complexity makes it difficult to do an accurate theoretical Non-Ionizing Radiation (NIR) analysis. Therefore, the management of First Canadian Place in consultation with Industry Canada has relied on measurements made on the building's roof to insure compliance with Safety Code 6. Numerous NIR measurements were made prior to the building cladding replacement project, which is currently underway, to insure the safety of the workers involved. These measurements will be repeated next year after the cladding project has been completed and the scaffolding and other temporary rooftop equipment removed.

Access to the roof is restricted to authorized people only and signs are in place warning of the presence of RF fields, in accordance with Safety Code 6. NIR levels inside the building are extremely low due to the shielding provided by the roof deck.

According to Gus Sondermeyer, who manages telecommunications activity on the roof for First Canadian Place, attempts to measure NIR in the mechanical rooms and 72nd floor offices by him and Industry Canada have found levels that were generally too low to be measured with the meters used for Safety Code 6 measurements.

Prior to approving construction of the proposed facilities the building's management reviewed and correlated them with the most recent NIR measurements to determine that they would not jeopardise Safety Code 6 compliance. The proposed antenna's vertical pattern has been shaped to minimize RF levels on the roof. This in combination with the relatively low power proposed has resulted in the new station having a negligible impact on the existing NIR levels. This was confirmed by measurements made on June 18, 2010 by Gus Sondermeyer and Ed Bogdanowicz, P.Eng. with NEW-FM operating. Summary results were provided by Mr. Bogdanowicz in an email which is attached as Table 4. These show the NIR levels near the south tower, where NEW-FM's antenna is located, to be easily in compliance with the Safety Code 6 limit for the general public.

13 - AERONAUTICAL NAV-COM COMPATIBILITY

In accordance with Industry Canada's usual practise aeronautical NAV-COM measurements were made on NEW-FM's facilities at the start of testing. No interference problems were found. Therefore, we conclude that this proposal is compatible with existing NAV/COM services.

14 - RESPONSIBILITIES AND COMMITMENTS

Per BPR-III-5.5.1, the applicant accepts responsibility to:

(A) In the case of intermodulation-type interference

- (a) remedy valid complaints of receiver-generated intermodulation interference within the 115 dB μ V/m contour and
- (b) provide technical advice to complainants, located between the 115 dB μ V/m contour and the service contours of the station, concerning appropriate action to resolve interference problems of this type attributed to the station, and
- (c) keep the appropriate district office of the Department fully informed of all complaints received and action taken,
- (d) assume their appropriate share of responsibility to immediately remedy the problem when more than one FM station is involved in transmitter-generated intermodulation products.

(B) In the case of immunity type interference

The broadcaster will be responsible for remedying valid immunity-type interference per the guidelines in Industry Canada's Client Procedures Circular 3-14-01.

15 - OTHER SIGNIFICANT INFORMATION

The applicant proposes stereo and RDS, which will not significantly degrade the overall performance of the broadcasting system.

The test facilities broadcast recorded programming stored on an iPod connected directly to the transmitter. The permanent facilities will use leased broadcast quality phone lines or a point to point radio system for the studio transmitter link

The transmitting facilities will be unattended and remotely controlled in accordance with BPR-I Section 5. Details of any changes will be provided later.

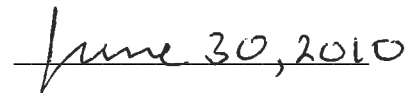
The installation will comply with Industry Canada, CSA, Health Canada and local hydro requirements, as well as standards of good engineering practice.

16 - ENGINEER'S SEAL AND SIGNATURE

This brief was prepared by the undersigned, who practices in the field of broadcast engineering.



Stuart Hahn, P. Eng.



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TABLE 1

PROGRAM FMSPACE - REVISION 2.6 September 2005
02-17-2010 17:25:27

SITE: NEW-FM LAT: 43 38 56N LONG: 79 22 54W CHANNEL: 254

CO-CHANNEL STATION(S)

STATION				BRG	DIST	PRO	MINIMA FOR CLASS		
				DEG	km	CON	B	B1	A
254C1	CBCB-FM	Owen Sound	ON	315.6	171.9	86	270*	256*	243#
254B	CBCP-FM	Peterborough	ON	61.9	112.7	65	236*	222*	209*
254B1	WCBA-FM	Corning	NY	131.0	251.6	51	222	197	184
254LP	RIPLEY	40 Ripley	NY	190.2	155.2	10	179#	154	122
254LP	ERI	41 Erie	PA	198.3	180.6	10	179	154	122
254LP	W254AJ	Erie	PA	197.9	186.6	10	179	154	122

1ST ADJACENT CHANNEL STATION(S)

STATION				BRG	DIST	PRO	MINIMA FOR CLASS		
				DEG	km	CON	B	B1	A
253B	CKWR-FM	Kitchener/Water	ON	256.6	92.1	65	164*	150*	137#
253B	CKWR-FM(1)	Kitchener/Water	ON	257.7	100.8	65	164*	150*	137#
253LP	CIOA-FM	Orillia	ON	358.1	107.9	10	109#	88	69
253B	WKSE(FM)	Niagara Falls	NY	153.4	92.6	65	164*	150*	137#
255B	CHCD-FM	Simcoe	ON	217.4	125.8	65	164#	150#	137!
255B	WBZA(FM)	Rochester	NY	110.5	147.9	65	164#	150!	137
255LP	SILVERCREEK40	Silver Creek	NY	170.3	127.4	10	109	88	69

2ND ADJACENT CHANNEL STATION(S)

STATION				BRG	DIST	PRO	MINIMA FOR CLASS		
				DEG	km	CON	B	B1	A
256C1	CBLA-FM	Toronto	ON	0.0	0.0	86*	106*	99*	95*

3RD ADJACENT CHANNEL STATION(S)

STATION				BRG	DIST	PRO
				DEG	km	CON
251C1	CHFI-FM	Toronto	ON	212.2	0.8	86*

IF CHANNEL STATION(S)

STATION				BRG	DIST	PRO	MINIMA FOR CLASS		
				DEG	km	CON	B	B1	A
201A	CKLN-FM	Toronto	ON	0.0	0.0	38*	15*	12*	10*

SHORT SPACING INDICATORS

- ! - ALLOTMENT OR ASSIGNMENT FULLY PROTECTED
- @ - ALLOTMENT PROTECTED PER RULE 1.1.17
- # - ALLOTMENT OR ASSIGNMENT PROTECTED BY MINIMUM PARAMETERS
- \$ - ALLOTMENT PROTECTED PER RULE 1.1.17 BY MINIMUM PARAMETERS
- * - ALLOTMENT OR ASSIGNMENT NOT PROTECTED

TABLE 2-1

PROGRAM F50CALC - REVISION 2.6 April 2008
 02-18-2010 11:01:57

NEW-FM - TORONTO 254B1 - PROTECTION ANALYSIS

STATION 1 CALL : NEW-FM
 COORDS : 43 38 56
 79 22 54

BEARING (DEG)	HAAT (m)	ERP (kW)	BEARING (DEG)	HAAT (m)	ERP (kW)
0.0	243.1	0.719	185.0	319.1	0.677
5.0	244.9	0.623	190.0	319.1	0.764
10.0	246.8	0.514	195.0	319.1	0.850
15.0	248.6	0.414	200.0	319.1	0.917
20.0	250.4	0.325	204.0	319.1	0.961
30.0	254.1	0.204	208.0	319.1	0.989
35.0	255.9	0.180	212.0	319.1	1.000
38.0	257.0	0.168	216.0	319.1	0.984
42.0	258.5	0.166	221.0	319.1	0.931
45.0	259.6	0.168	225.0	319.1	0.862
49.0	264.9	0.173	229.0	315.5	0.786
53.0	270.2	0.176	233.0	312.0	0.708
57.0	275.5	0.174	240.0	305.8	0.592
60.0	279.4	0.170	245.0	301.3	0.545
65.0	286.0	0.156	248.0	298.7	0.530
70.0	292.7	0.137	251.0	296.0	0.529
75.0	299.3	0.116	256.0	291.5	0.542
80.0	305.9	0.096	267.0	281.8	0.632
85.0	312.5	0.078	270.0	279.1	0.663
90.0	319.1	0.064	274.0	275.7	0.701
95.0	319.1	0.052	278.0	272.3	0.719
100.0	319.1	0.042	281.0	269.7	0.726
105.0	319.1	0.033	284.0	267.1	0.719
110.0	319.1	0.025	288.0	263.7	0.693
119.0	319.1	0.014	294.0	258.6	0.635
121.0	319.1	0.014	300.0	253.4	0.574
124.0	319.1	0.014	308.0	246.6	0.541
130.0	319.1	0.021	315.0	240.6	0.576
135.0	319.1	0.032	323.0	241.0	0.663
144.0	319.1	0.073	328.0	241.3	0.728
150.0	319.1	0.120	333.0	241.6	0.789
155.0	319.1	0.177	338.0	241.9	0.839
160.0	319.1	0.247	342.0	242.1	0.864
165.0	319.1	0.325	345.0	242.3	0.869
170.0	319.1	0.410	348.0	242.4	0.859
175.0	319.1	0.498	352.0	242.7	0.834
180.0	319.1	0.590	356.0	242.9	0.787

TABLE 2-2

STATION 2 CALL : CBCB-FM
 COORDS : 44 44 37
 80 54 15

BEARING (DEG)	HAAT (m)	ERP (kW)
0.0	224.0	100.000
45.0	243.5	100.000
90.0	243.5	100.000
135.0	201.0	100.000
180.0	240.5	100.000
225.0	179.5	100.000
270.0	168.0	100.000
315.0	196.5	100.000

STATION 3 CALL : CBCP-FM
 COORDS : 44 7 11
 78 8 11

BEARING (DEG)	HAAT (m)	ERP (kW)
0.0	266.5	11.400
45.0	210.5	15.500
90.0	223.5	19.150
135.0	234.5	5.800
180.0	255.5	1.800
225.0	233.0	3.800
270.0	262.5	12.300
315.0	273.0	11.700

STATION 4 CALL : WKSE(FM)
 COORDS : 42 54 13
 78 52 19

BEARING (DEG)	HAAT (m)	ERP (kW)
0.0	128.0	46.000

STATION 5 CALL : CKWR(LIM EZ)
 COORDS : 43 27 0
 80 36 7

BEARING (DEG)	HAAT (m)	ERP (kW)
0.0	207.0	9.890

TABLE 2-3

STATION 6 CALL : CKWR-FM
 COORDS : 43 27 0
 80 36 7

BEARING (DEG)	HAAT (m)	ERP (kW)	BEARING (DEG)	HAAT (m)	ERP (kW)
0.0	176.0	5.694	193.1	182.9	20.224
6.2	179.7	6.953	199.6	180.8	20.236
12.7	183.6	8.961	206.9	178.3	21.601
20.2	188.1	10.975	212.6	176.4	21.510
25.8	191.3	12.031	221.3	173.5	21.311
33.5	195.9	13.472	225.0	172.3	21.190
40.8	200.3	14.071	232.2	171.5	20.332
45.0	202.8	14.160	237.3	170.9	19.536
49.2	203.3	14.238	242.5	170.3	19.258
56.7	204.2	13.826	246.3	169.8	19.551
62.9	205.0	12.571	251.3	169.3	20.768
70.0	205.9	11.270	254.3	168.9	22.200
78.3	206.9	9.669	258.8	168.4	23.662
83.4	207.5	8.272	263.3	167.9	24.790
86.1	207.8	7.844	267.3	167.4	25.925
90.0	208.3	8.320	270.0	167.1	26.400
94.8	205.3	9.148	275.4	164.6	27.000
100.2	201.8	10.276	279.1	162.9	26.696
107.0	197.4	10.676	283.4	160.9	25.839
114.9	192.4	11.037	287.6	159.0	24.896
121.7	188.1	11.785	291.1	157.4	23.817
127.3	184.5	13.174	295.9	155.2	22.194
132.6	181.1	15.732	300.4	153.1	20.216
135.0	179.6	16.760	304.7	151.2	18.773
138.8	180.2	19.018	308.0	149.6	16.846
143.1	181.0	20.725	311.5	148.0	14.891
147.5	181.7	22.367	315.0	146.4	13.040
151.4	182.4	23.631	320.3	149.9	10.524
155.3	183.1	24.942	324.2	152.5	8.419
159.3	183.8	25.530	327.7	154.8	7.151
162.3	184.3	26.607	331.0	157.0	6.399
165.7	184.9	26.538	336.7	160.7	6.058
170.3	185.6	26.456	344.5	165.8	5.504
175.5	186.5	25.547	346.8	167.3	5.168
180.0	187.3	24.453	352.7	171.2	4.910
186.1	185.3	22.580	358.5	175.0	5.402

STATION 7 CALL : CHCD(LIM-DL)
 COORDS : 42 44 48
 80 19 6

BEARING (DEG)	HAAT (m)	ERP (kW)
0.0	145.0	0.550

TABLE 2-4

STATION 8 CALL : CHCD-FM
 COORDS : 42 44 48
 80 19 6

BEARING (DEG)	HAAT (m)	ERP (kW)	BEARING (DEG)	HAAT (m)	ERP (kW)
0.0	129.0	6.845	180.0	175.0	0.180
5.0	131.1	3.645	185.0	171.6	0.245
10.0	133.2	2.420	190.0	168.1	0.405
15.0	135.3	1.620	195.0	164.7	0.605
20.0	137.4	0.845	200.0	161.2	0.845
25.0	139.6	0.605	205.0	157.8	1.620
30.0	141.7	0.405	210.0	154.3	2.420
35.0	143.8	0.245	215.0	150.9	3.645
40.0	145.9	0.180	220.0	147.4	6.845
45.0	148.0	0.125	225.0	144.0	10.580
50.0	151.4	0.080	230.0	142.2	14.580
55.0	154.9	0.045	235.0	140.4	18.605
60.0	158.3	0.020	240.0	138.7	23.805
65.0	161.8	0.031	245.0	136.9	28.880
70.0	165.2	0.045	250.0	135.1	33.620
75.0	168.7	0.061	255.0	133.3	37.845
80.0	172.1	0.080	260.0	131.6	41.861
85.0	175.6	0.101	265.0	129.8	44.651
90.0	179.0	0.125	270.0	128.0	47.045
95.0	179.1	0.151	275.0	127.1	48.511
100.0	179.2	0.180	280.0	126.2	49.005
105.0	179.3	0.211	285.0	125.3	50.000
110.0	179.4	0.245	290.0	124.4	50.000
115.0	179.6	0.211	295.0	123.6	50.000
120.0	179.7	0.180	300.0	122.7	50.000
125.0	179.8	0.151	305.0	121.8	49.005
130.0	179.9	0.125	310.0	120.9	48.511
135.0	180.0	0.101	315.0	120.0	47.045
140.0	179.4	0.080	320.0	121.0	44.651
145.0	178.9	0.061	325.0	122.0	41.861
150.0	178.3	0.045	330.0	123.0	37.845
155.0	177.8	0.031	335.0	124.0	33.620
160.0	177.2	0.020	340.0	125.0	28.880
165.0	176.7	0.045	345.0	126.0	23.805
170.0	176.1	0.080	350.0	127.0	18.605
175.0	175.6	0.125	355.0	128.0	14.580

STATION 9 CALL : WBZA(FM)
 COORDS : 43 10 14
 77 40 22

BEARING (DEG)	HAAT (m)	ERP (kW)
0.0	172.0	37.000

TABLE 2-5

STATION 10 CALL : CBLA-FM(1)
 COORDS : 43 38 56
 79 22 54

BEARING (DEG)	HAAT (m)	ERP (kW)	BEARING (DEG)	HAAT (m)	ERP (kW)
0.0	270.0	70.100	163.8	346.0	17.400
9.7	273.6	58.000	167.7	346.0	24.000
19.3	277.1	60.700	172.0	346.0	30.900
30.0	281.0	82.500	180.0	346.0	47.300
39.8	284.6	92.500	189.9	346.0	70.200
45.0	286.5	88.400	197.0	346.0	85.100
57.3	302.8	70.900	209.0	346.0	98.000
68.5	317.6	49.100	225.0	346.0	79.400
75.0	326.2	39.100	235.4	336.8	61.500
85.4	339.9	24.500	244.3	328.8	55.300
90.0	346.0	19.300	254.4	319.9	57.400
97.7	346.0	9.660	270.0	306.0	50.000
103.5	346.0	5.910	274.5	302.1	46.400
109.9	346.0	2.230	285.5	292.7	61.200
115.8	346.0	0.930	292.7	286.6	77.800
129.6	346.0	0.790	300.3	280.1	93.400
135.0	346.0	1.370	310.5	271.4	93.600
142.4	346.0	2.170	315.0	267.5	89.900
151.4	346.0	5.060	326.6	268.1	72.700
155.6	346.0	7.980	334.8	268.6	69.900
160.1	346.0	11.800	350.1	269.5	82.400

STATION 11 CALL : CHFI-FM
 COORDS : 43 38 33
 79 23 14

BEARING (DEG)	HAAT (m)	ERP (kW)
0.0	387.0	44.000
45.0	403.0	44.000
90.0	463.0	44.000
135.0	463.0	44.000
180.0	463.0	44.000
225.0	463.0	44.000
270.0	423.0	44.000
315.0	384.5	44.000

TABLE 2-6

F(50,XX) CURVES USED : CHANNELS 2 TO 6 AND FM

FROM WKSE(FM)			FROM NEW-FM			---PROPOSED---		--PERMISSIBLE--	
BRG	DIST	F(50,50)	BRG	DIST	HAAT	ERP	F(50,10)	ERP	F(50,10)
DEG	km	mV/m	DEG	km	m	W	mV/m	W	mV/m
36.1	65.0	0.500*	110.7	84.9	319.1	24.12	0.017	5072.72	0.250
30.6	60.4	0.504*	113.0	78.2	319.1	21.11	0.021	3050.62	0.252
26.2	58.8	0.548*	114.0	73.4	319.1	19.96	0.024	2511.63	0.274
20.6	53.4	0.736*	118.6	68.3	319.1	14.84	0.026	2967.00	0.368
11.9	49.3	0.930*	123.8	61.8	319.1	14.26	0.034	2687.72	0.465
4.4	46.0	1.107*	129.5	57.9	319.1	20.45	0.048	2733.17	0.554
356.9	44.0	1.241*	135.0	54.9	319.1	32.15	0.068	2698.14	0.620
349.9	42.3	1.364*	140.6	53.2	319.1	55.39	0.096	2816.98	0.682
339.9	42.3	1.367*	148.2	50.7	319.1	104.39	0.146	2279.12	0.684
337.3	35.6	2.071*	151.1	57.1	319.1	132.11	0.126	8955.39	1.036

* SHORELINE POINT

FROM CHCD-FM			FROM NEW-FM			---PROPOSED---		--PERMISSIBLE--	
BRG	DIST	F(50,50)	BRG	DIST	HAAT	ERP	F(50,10)	ERP	F(50,10)
DEG	km	mV/m	DEG	km	m	W	mV/m	W	mV/m
115.0	26.3	0.500*	205.4	123.1	319.1	970.54	0.032	61018.31	0.250
67.6	26.3	0.500*	210.0	104.1	319.1	994.49	0.056	19875.12	0.250
46.1	26.3	0.500*	215.0	99.9	319.1	987.99	0.064	14861.75	0.250
27.0	26.3	0.500*	220.0	99.9	319.1	941.48	0.063	14906.35	0.250
14.3	33.1	0.500	225.0	96.0	319.1	861.99	0.069	11404.86	0.250
4.6	38.8	0.500	230.0	95.2	314.7	766.00	0.066	11126.49	0.250
358.4	45.8	0.500	235.0	94.3	310.2	673.80	0.062	10851.33	0.250
350.7	51.8	0.500	240.0	97.3	305.8	591.98	0.052	13892.68	0.250
325.6	58.6	0.500	244.9	120.4	301.4	546.31	0.023	62137.91	0.250

* CHCD LIM. DL

FROM WBZA(FM)			FROM NEW-FM			---PROPOSED---		--PERMISSIBLE--	
BRG	DIST	F(50,50)	BRG	DIST	HAAT	ERP	F(50,10)	ERP	F(50,10)
DEG	km	mV/m	DEG	km	m	W	mV/m	W	mV/m
296.9	49.1	1.133*	107.9	99.1	319.1	28.10	0.011	72006.52	0.566
294.4	54.2	0.850*	108.9	93.8	319.1	26.62	0.013	28041.30	0.425
292.4	59.1	0.657*	110.0	88.8	319.1	25.01	0.015	11667.20	0.328
290.8	65.0	0.500*	111.1	82.9	319.1	23.49	0.018	4329.08	0.250
285.9	65.0	0.500	115.0	83.5	319.1	18.79	0.016	4524.95	0.250
279.1	65.0	0.500	120.0	85.6	319.1	14.00	0.013	5330.59	0.250
271.4	65.0	0.500	125.0	89.8	319.1	15.34	0.012	7239.18	0.250
261.7	65.0	0.500	130.0	97.1	319.1	21.10	0.010	12309.95	0.250
245.4	65.0	0.500	135.0	113.1	319.1	32.22	0.008	35505.95	0.250

* SHORELINE POINT

TABLE 3-1

PROGRAM F50CALC - REVISION 2.6 April 2008
02-18-2010 11:41:09

NEW-FM - TORONTO 254B1 - CONTOUR CALCULATIONS

F(50,XX) CURVES USED : CHANNELS 2 TO 6 AND FM

BEARING	HAAT	ERP	DISTANCE TO F(50,50)			mV/m	CONTOUR IN km
DEGREES	m	W	100.00	3.00	0.50		
0.0	243.1	719	1.7	15.2	35.4		
45.0	259.6	168	0.8	10.8	26.3		
90.0	319.1	64	0.5	9.3	23.0		
135.0	319.1*	32	0.4	7.7	19.5		
180.0	319.1*	590	1.6	16.5	38.4		
225.0	319.1	862	1.9	18.1	41.5		
270.0	279.1	663	1.6	15.9	37.0		
315.0	<u>240.6</u>	576	1.5	14.3	33.6		
AVE.	276.8						

* OVER WATER RADIALS EXCLUDED FROM AVERAGE

BEARING	HAAT	ERP	DISTANCE TO F(50,50)			mV/m	CONTOUR IN km
DEGREES	m	kW	100.00	3.00	0.50		
0.0	243.1	0.7	1.7	15.2	35.4		
5.0	244.9	0.6	1.6	14.7	34.5		
10.0	246.8	0.5	1.5	14.1	33.2		
15.0	248.6	0.4	1.3	13.4	31.7		
20.0	250.4	0.3	1.2	12.6	30.2		
30.0	254.1	0.2	0.9	11.3	27.2		
35.0	255.9	0.2	0.9	10.9	26.5		
38.0	257.0	0.2	0.8	10.8	26.1		
42.0	258.5	0.2	0.8	10.8	26.1		
45.0	259.6	0.2	0.8	10.8	26.3		
49.0	264.9	0.2	0.8	11.0	26.7		
53.0	270.2	0.2	0.9	11.2	27.1		
57.0	275.5	0.2	0.9	11.3	27.3		
60.0	279.4	0.2	0.8	11.3	27.3		
65.0	286.0	0.2	0.8	11.1	27.0		
70.0	292.7	0.1	0.8	10.9	26.5		
75.0	299.3	0.1	0.7	10.6	25.7		
80.0	305.9	0.1	0.6	10.1	24.8		
85.0	312.5	0.1	0.6	9.7	23.9		
90.0	319.1	0.1	0.5	9.3	23.0		
95.0	319.1	0.1	0.5	8.8	21.9		
100.0	319.1	0.0	0.4	8.3	20.7		
105.0	319.1	0.0	0.4	7.7	19.5		
110.0	319.1	0.0	0.3	7.1	18.3		
119.0	319.1	0.0	0.2	5.9	16.0		
121.0	319.1	0.0	0.2	5.8	15.7		
124.0	319.1	0.0	0.2	5.9	15.9		
130.0	319.1	0.0	0.3	6.7	17.5		
135.0	319.1	0.0	0.4	7.7	19.5		
144.0	319.1	0.1	0.6	9.6	23.7		
150.0	319.1	0.1	0.7	11.0	26.8		

TABLE 3-2

155.0	319.1	0.2	0.9	12.1	29.5
160.0	319.1	0.2	1.0	13.2	31.7
165.0	319.1	0.3	1.2	14.2	33.7
170.0	319.1	0.4	1.3	15.1	35.5
175.0	319.1	0.5	1.5	15.8	37.0
180.0	319.1	0.6	1.6	16.5	38.4
185.0	319.1	0.7	1.7	17.1	39.6
190.0	319.1	0.8	1.8	17.6	40.6
195.0	319.1	0.9	1.8	18.0	41.4
200.0	319.1	0.9	1.9	18.4	42.1
204.0	319.1	1.0	1.9	18.6	42.4
208.0	319.1	1.0	2.0	18.7	42.7
212.0	319.1	1.0	2.0	18.8	42.8
216.0	319.1	1.0	2.0	18.7	42.6
221.0	319.1	0.9	1.9	18.4	42.2
225.0	319.1	0.9	1.9	18.1	41.5
229.0	315.5	0.8	1.8	17.6	40.6
233.0	312.0	0.7	1.7	17.1	39.5
240.0	305.8	0.6	1.6	16.2	37.7
245.0	301.3	0.5	1.5	15.7	36.8
248.0	298.7	0.5	1.5	15.6	36.4
251.0	296.0	0.5	1.5	15.5	36.2
256.0	291.5	0.5	1.5	15.5	36.2
267.0	281.8	0.6	1.6	15.8	36.8
270.0	279.1	0.7	1.6	15.9	37.0
274.0	275.7	0.7	1.7	16.0	37.3
278.0	272.3	0.7	1.7	16.0	37.3
281.0	269.7	0.7	1.7	16.0	37.2
284.0	267.1	0.7	1.7	15.9	37.0
288.0	263.7	0.7	1.7	15.7	36.5
294.0	258.6	0.6	1.6	15.2	35.5
300.0	253.4	0.6	1.5	14.7	34.4
308.0	246.6	0.5	1.5	14.2	33.5
315.0	240.6	0.6	1.5	14.3	33.6
323.0	241.0	0.7	1.6	14.8	34.7
328.0	241.3	0.7	1.7	15.2	35.4
333.0	241.6	0.8	1.7	15.5	36.0
338.0	241.9	0.8	1.8	15.7	36.5
342.0	242.1	0.9	1.8	15.9	36.8
345.0	242.3	0.9	1.8	15.9	36.9
348.0	242.4	0.9	1.8	15.9	36.8
352.0	242.7	0.8	1.8	15.7	36.5
356.0	242.9	0.8	1.7	15.5	36.1

NEW-FM : CHCD-FM = 2 : 1 LIMITATION CONTOUR

NO LIMITATION FOUND WITHIN NEW-FM .5 mV/m CONTOUR

NEW-FM : CHCD(LIM-DL) = 2 : 1 LIMITATION CONTOUR

NO LIMITATION FOUND WITHIN NEW-FM .5 mV/m CONTOUR

NEW-FM : WBZA(B) = 2 : 1 LIMITATION CONTOUR

NO LIMITATION FOUND WITHIN NEW-FM .5 mV/m CONTOUR

TABLE 3-3

NEW-FM : CBCB(C1) = 10 : 1 LIMITATION CONTOUR

FROM NEW-FM					FROM CBCB(C1)				
BRG DEG	DIST km	HAAT m	ERP kW	F(50,50) mV/m	BRG DEG	DIST km	HAAT m	ERP kW	F(50,10) mV/m
150.0	24.4	319.1	0.12	0.608	136.3	195.6	300.0	100.00	0.061
165.0	32.4	319.1	0.33	0.549	139.1	200.7	300.0	100.00	0.055
180.0	36.5	319.1	0.59	0.560	141.9	199.6	300.0	100.00	0.056
195.0	37.6	319.1	0.85	0.630	144.2	193.7	300.0	100.00	0.063
210.0	35.9	319.1	0.99	0.759	145.3	184.8	300.0	100.00	0.076
225.0	31.8	319.1	0.86	0.930	145.0	175.1	300.0	100.00	0.093
240.0	26.4	305.8	0.59	1.094	143.4	167.3	300.0	100.00	0.109
255.0	23.9	292.4	0.54	1.233	141.9	161.5	300.0	100.00	0.123
270.0	23.3	279.1	0.66	1.369	140.7	156.4	300.0	100.00	0.137
285.0	22.4	266.3	0.71	1.470	138.8	153.0	300.0	100.00	0.147
300.0	20.6	253.4	0.57	1.498	136.6	152.1	300.0	100.00	0.150
315.0	20.0	240.6	0.58	1.508	134.6	151.8	300.0	100.00	0.151
330.0	21.3	241.4	0.75	1.524	132.5	151.3	300.0	100.00	0.152
345.0	22.4	242.3	0.87	1.477	130.4	152.7	300.0	100.00	0.148
0.0	22.3	243.1	0.72	1.362	128.8	156.7	300.0	100.00	0.136
15.0	20.9	248.6	0.41	1.215	128.2	162.2	300.0	100.00	0.121
30.0	18.8	254.1	0.20	1.084	128.4	167.8	300.0	100.00	0.108
45.0	19.0	259.6	0.17	0.978	128.2	172.7	300.0	100.00	0.098
60.0	20.9	279.4	0.17	0.873	128.0	178.2	300.0	100.00	0.087
75.0	20.6	299.3	0.12	0.791	128.9	182.9	300.0	100.00	0.079
90.0	19.0	319.1	0.06	0.746	130.4	185.6	300.0	100.00	0.075
105.0	16.1	319.1	0.03	0.741	132.0	185.9	300.0	100.00	0.074
120.0	12.7	319.1	0.01	0.769	133.5	184.1	300.0	100.00	0.077
135.0	16.4	319.1	0.03	0.705	134.5	188.3	300.0	100.00	0.070

NEW-FM : CBCP(B) = 10 : 1 LIMITATION CONTOUR

FROM NEW-FM					FROM CBCP(B)				
BRG DEG	DIST km	HAAT m	ERP kW	F(50,50) mV/m	BRG DEG	DIST km	HAAT m	ERP kW	F(50,10) mV/m
255.0	26.7	292.4	0.54	0.978	245.3	138.8	150.0	50.00	0.098
270.0	26.9	279.1	0.66	1.016	248.1	137.0	150.0	50.00	0.102
285.0	25.5	266.3	0.71	1.123	250.3	132.4	150.0	50.00	0.112
300.0	22.0	253.4	0.57	1.300	251.3	125.7	150.0	50.00	0.130
315.0	20.3	240.6	0.58	1.472	252.0	120.1	150.0	50.00	0.147
330.0	20.5	241.4	0.75	1.655	253.0	115.2	150.0	50.00	0.166
345.0	19.9	242.3	0.87	1.886	252.9	109.9	150.0	50.00	0.189
0.0	18.0	243.1	0.72	2.119	251.4	105.4	150.0	50.00	0.212
15.0	15.4	248.6	0.41	2.272	249.0	102.8	150.0	50.00	0.227
30.0	12.8	254.1	0.20	2.321	246.6	102.0	150.0	50.00	0.232
45.0	12.2	259.6	0.17	2.382	244.8	101.1	150.0	50.00	0.238
60.0	12.5	279.4	0.17	2.441	243.0	100.2	150.0	50.00	0.244
75.0	11.9	299.3	0.12	2.376	241.2	101.1	150.0	50.00	0.238
90.0	10.8	319.1	0.06	2.242	239.9	103.2	150.0	50.00	0.224
105.0	9.4	319.1	0.03	2.088	239.3	106.0	150.0	50.00	0.209
120.0	7.8	319.1	0.01	1.942	239.3	108.8	150.0	50.00	0.194
135.0	9.9	319.1	0.03	1.873	237.8	110.2	150.0	50.00	0.187
150.0	14.5	319.1	0.12	1.741	235.4	113.1	150.0	50.00	0.174
165.0	19.9	319.1	0.33	1.521	233.4	118.8	150.0	50.00	0.152
180.0	25.0	319.1	0.59	1.283	232.7	126.4	150.0	50.00	0.128

TABLE 3-4

195.0	29.8	319.1	0.85	1.066	233.5	134.8	150.0	50.00	0.107
210.0	33.0	319.1	0.99	0.920	235.7	141.7	150.0	50.00	0.092
225.0	32.7	319.1	0.86	0.872	239.0	144.3	150.0	50.00	0.087
240.0	28.6	305.8	0.59	0.928	242.4	141.3	150.0	50.00	0.093

NEW-FM : CKWR-FM = 2 : 1 LIMITATION CONTOUR

FROM NEW-FM					FROM CKWR-FM				
BRG DEG	DIST km	HAAT m	ERP kW	F(50,50) mV/m	BRG DEG	DIST km	HAAT m	ERP kW	F(50,10) mV/m
205.1	42.5	319.1	0.97	0.500	101.2	82.2	201.2	10.33	0.250
210.0	41.0	319.1	0.99	0.556	99.4	79.2	202.3	10.12	0.278
220.0	38.1	319.1	0.94	0.641	95.2	74.3	205.0	9.24	0.321
230.0	35.1	314.7	0.77	0.689	90.1	71.6	208.2	8.34	0.344
240.0	32.5	305.8	0.59	0.702	85.0	70.5	207.7	8.03	0.351
250.0	30.5	296.9	0.53	0.743	80.2	70.6	207.1	9.14	0.371
260.0	30.0	288.0	0.57	0.777	75.9	70.7	206.6	10.12	0.388
270.0	30.4	279.1	0.66	0.787	71.7	71.3	206.1	10.94	0.393
280.0	31.0	270.5	0.72	0.761	67.7	73.0	205.6	11.69	0.381
290.0	31.3	262.0	0.67	0.694	64.2	76.1	205.2	12.32	0.347
300.0	31.5	253.4	0.57	0.610	61.6	80.3	204.8	12.82	0.305
310.0	32.8	244.9	0.55	0.525	59.1	84.7	204.5	13.34	0.262
313.1	33.6	242.2	0.57	0.500	58.2	86.2	204.4	13.51	0.250

NEW-FM : WKSE(B) = 2 : 1 LIMITATION CONTOUR

FROM NEW-FM					FROM WKSE(B)				
BRG DEG	DIST km	HAAT m	ERP kW	F(50,50) mV/m	BRG DEG	DIST km	HAAT m	ERP kW	F(50,10) mV/m
56.9	27.3	275.4	0.17	0.500	349.5	99.3	150.0	50.00	0.250
60.0	26.7	279.4	0.17	0.522	349.5	97.8	150.0	50.00	0.261
70.0	24.2	292.7	0.14	0.604	348.7	92.9	150.0	50.00	0.302
80.0	21.3	305.9	0.10	0.687	347.0	88.8	150.0	50.00	0.344
90.0	18.8	319.1	0.06	0.762	345.0	85.8	150.0	50.00	0.381
100.0	16.3	319.1	0.04	0.815	342.7	83.8	150.0	50.00	0.408
110.0	14.1	319.1	0.03	0.843	340.4	82.8	150.0	50.00	0.422
120.0	12.1	319.1	0.01	0.848	338.3	82.7	150.0	50.00	0.424
130.0	13.0	319.1	0.02	0.908	337.4	80.8	150.0	50.00	0.454
140.0	15.5	319.1	0.05	1.018	336.3	77.5	150.0	50.00	0.509
150.0	18.0	319.1	0.12	1.131	334.5	74.5	150.0	50.00	0.566
160.0	20.6	319.1	0.25	1.238	331.8	72.1	150.0	50.00	0.619
170.0	22.8	319.1	0.41	1.292	328.4	71.0	150.0	50.00	0.646
180.0	24.9	319.1	0.59	1.286	324.7	71.1	150.0	50.00	0.643
190.0	27.2	319.1	0.76	1.221	320.8	72.5	150.0	50.00	0.610
200.0	29.9	319.1	0.92	1.105	316.9	75.2	150.0	50.00	0.552
210.0	32.5	319.1	0.99	0.953	313.8	79.4	150.0	50.00	0.476
220.0	34.9	319.1	0.94	0.784	311.5	85.0	150.0	50.00	0.392
230.0	36.4	314.7	0.77	0.636	310.9	91.3	150.0	50.00	0.318
240.0	36.8	305.8	0.59	0.526	311.6	97.6	150.0	50.00	0.263
242.7	37.2	303.4	0.57	0.500	311.7	99.3	150.0	50.00	0.250

Subject: NIR measurements near the South Tower on FCP rooftop.

From: "Ed Bogdanowicz" <eab@bcei.ca>

Date: Wed, 23 Jun 2010 18:48:36 -0400

To: "Stuart Hahn" <stuart@hbeng.ca>

CC: "Gus Sondermeyer" <gus.sondermeyer@gsbts.com>

TABLE 4

Hi Stuart,

Further to your request related to the measurements made by me in the company of Gus Sondermeyer on 18 June 2010 on the rooftop of First Canadian Place, the results obtained at relevant points near the south tower on which the CARN test antenna is located, and operating normally at the time of the measurements, are as follows:

Using the south tower as a reference point:

- approximately 5 m south, between the two cooling tower fans: 0.32 W/m^2 (16% of SC-6 for uncontrolled environments – general public)
- approximately 14 m east along the walkway, near the southeast corner of the penthouse: 0.50 W/m^2 (25% of SC-6 for uncontrolled environments – general public)
- approximately 21 m west, along the walkway, near the southwest corner of the penthouse: 0.43 W/m^2 (25% of SC-6 for uncontrolled environments – general public)

The measurements were done using the 9 point averaging recommended in Safety Code 6. The measurements were made using a Holaday HI-3001, S/N 58084. This instrument has an unshaped frequency response; consequently, contributions from television and microwave services contribute more than they should due to the rising power density with frequency permitted by Safety Code 6. Thus, the actual percentages of permitted exposure level is less than stated above. Since these services typically use very directional antennas, their contribution on the rooftop is a small part of the total, being mostly comprised of FM broadcast services. This is known from previous work done by me at FCP. Thus, the figures above are believed to be reasonably accurate, but somewhat higher than actually exist.

If you have any questions related to this, please do not hesitate to call.

Ed Bogdanowicz, P. Eng.

President

Bogdanowicz Consulting Engineering Inc.

16 Shadberry Drive

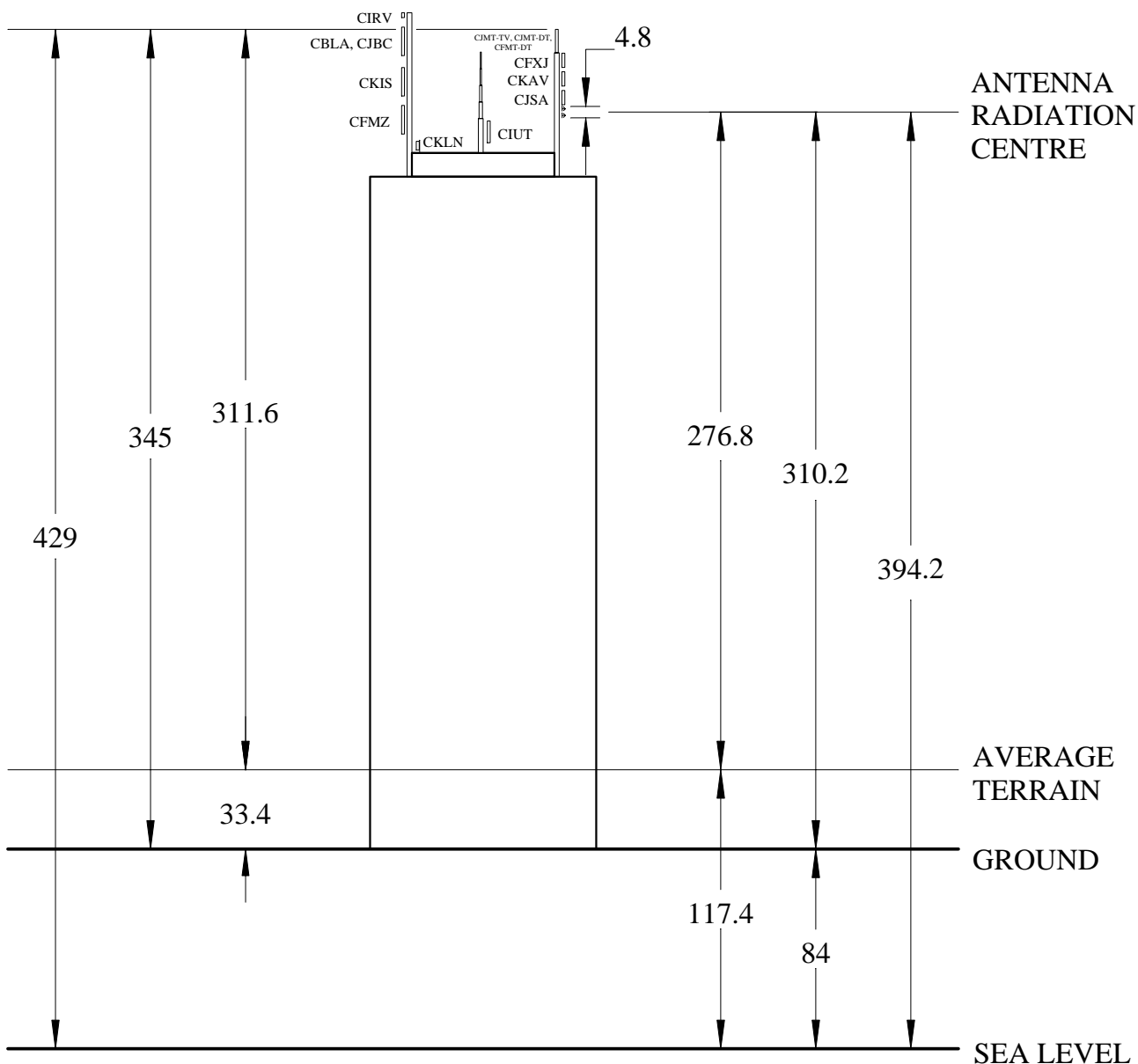
Toronto, ON M2H 3C8

P 416-499-2999

F 416-499-8730

E eab@bcei.ca

FIGURE 1



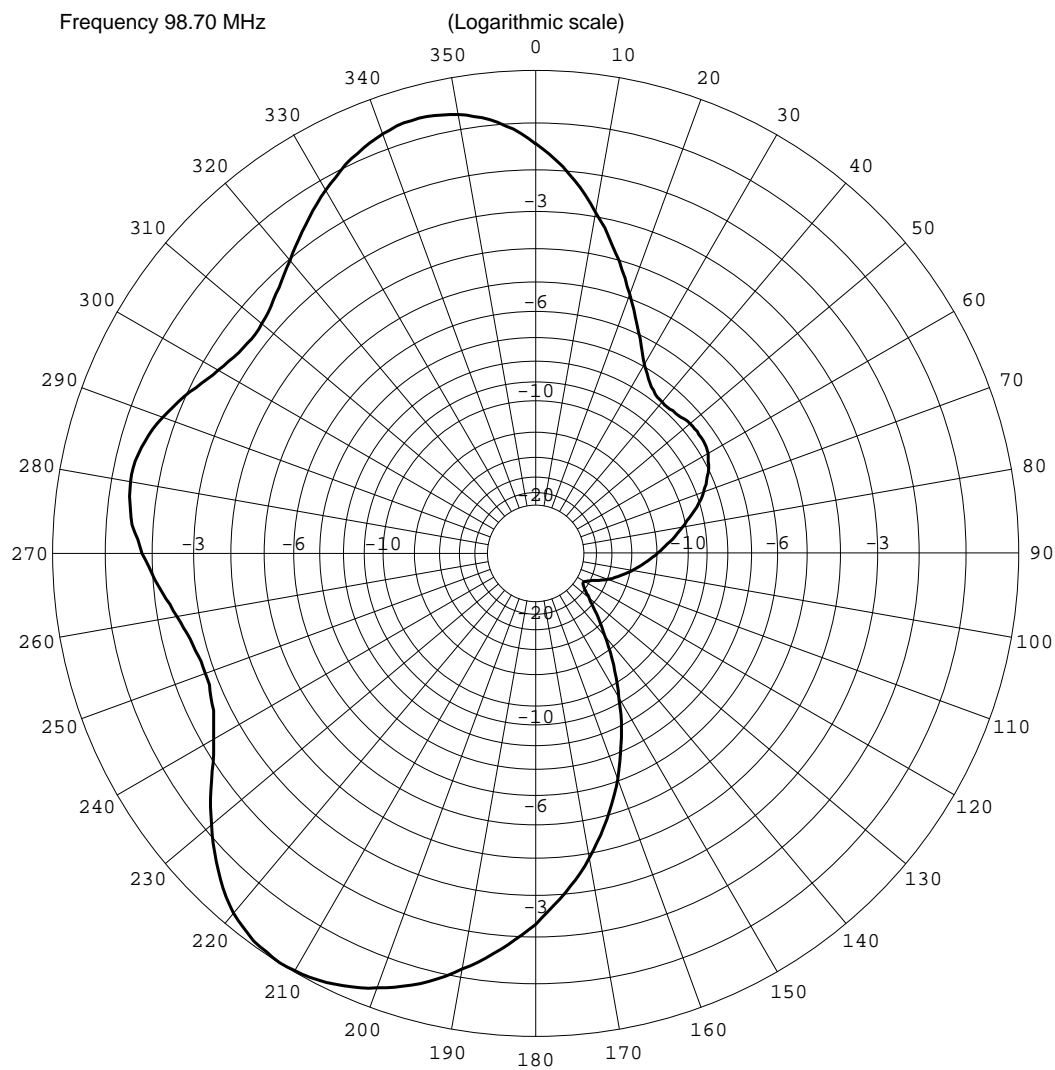
ALL DIMENSIONS
IN METRES

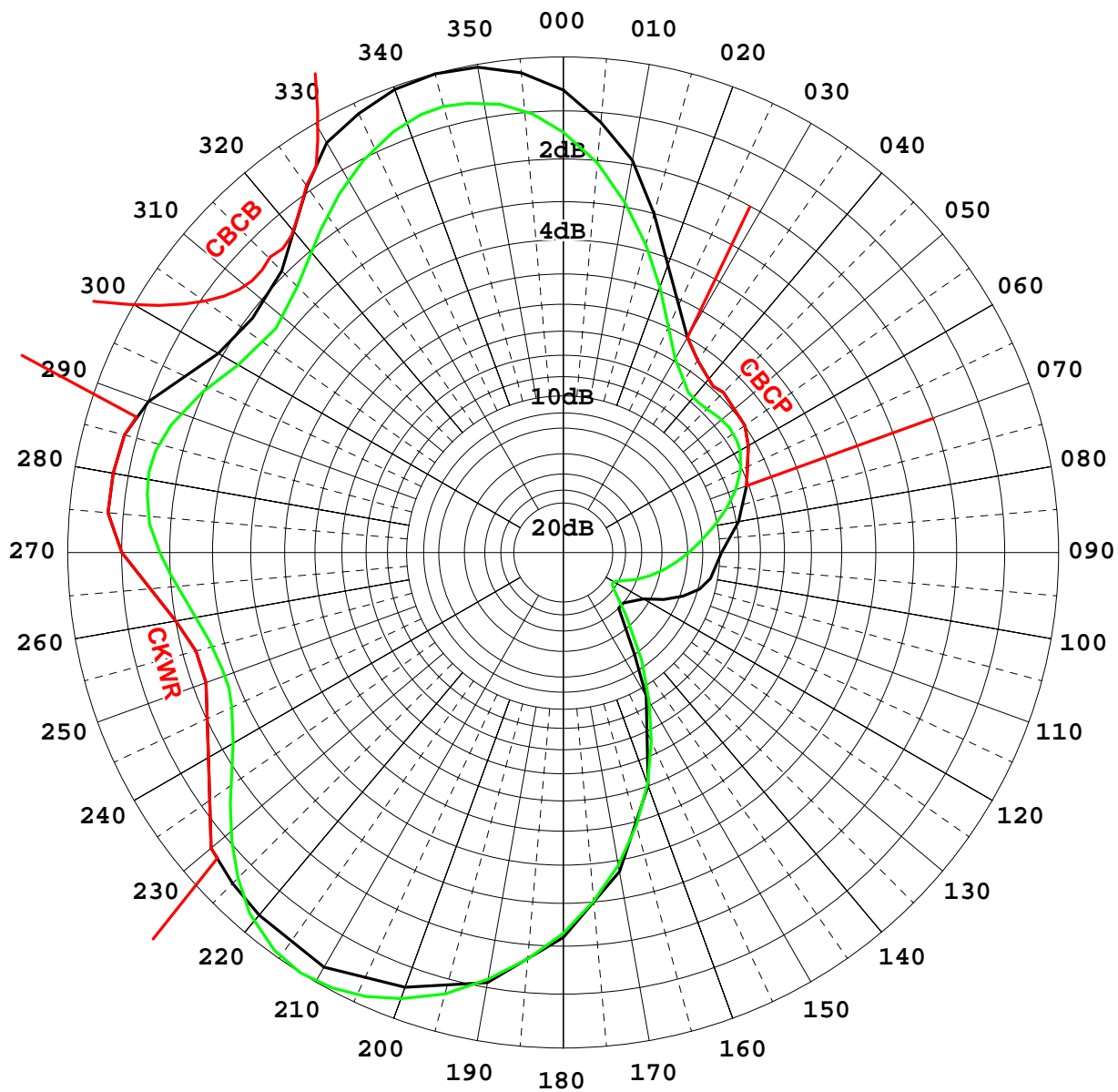
NEW-FM - TORONTO, ONTARIO
1000 W (MAX) 276.8 m 254B1 98.7 MHz
ANTENNA ELEVATION DIAGRAM
H.B.E. DECEMBER 2009

FIGURE 2-1

SIRA Sistemi Radio	FMC-05/6 (2X3) CARN	Date : 10/02/2010 Oper : Appr.: Graph No.: 1
------------------------------	------------------------	---

THEORETICAL HORIZONTAL PATTERN





PRESENT SIRA PATTERN
2005 KATHREIN PATTERN
PROTECTIONS



FIGURE 2-2

NEW-FM - TORONTO, ONTARIO
1000 W (MAX) 276.8 m 254B1 98.7 MHz

HORIZONTAL RADIATION
PATTERN COMPARISON

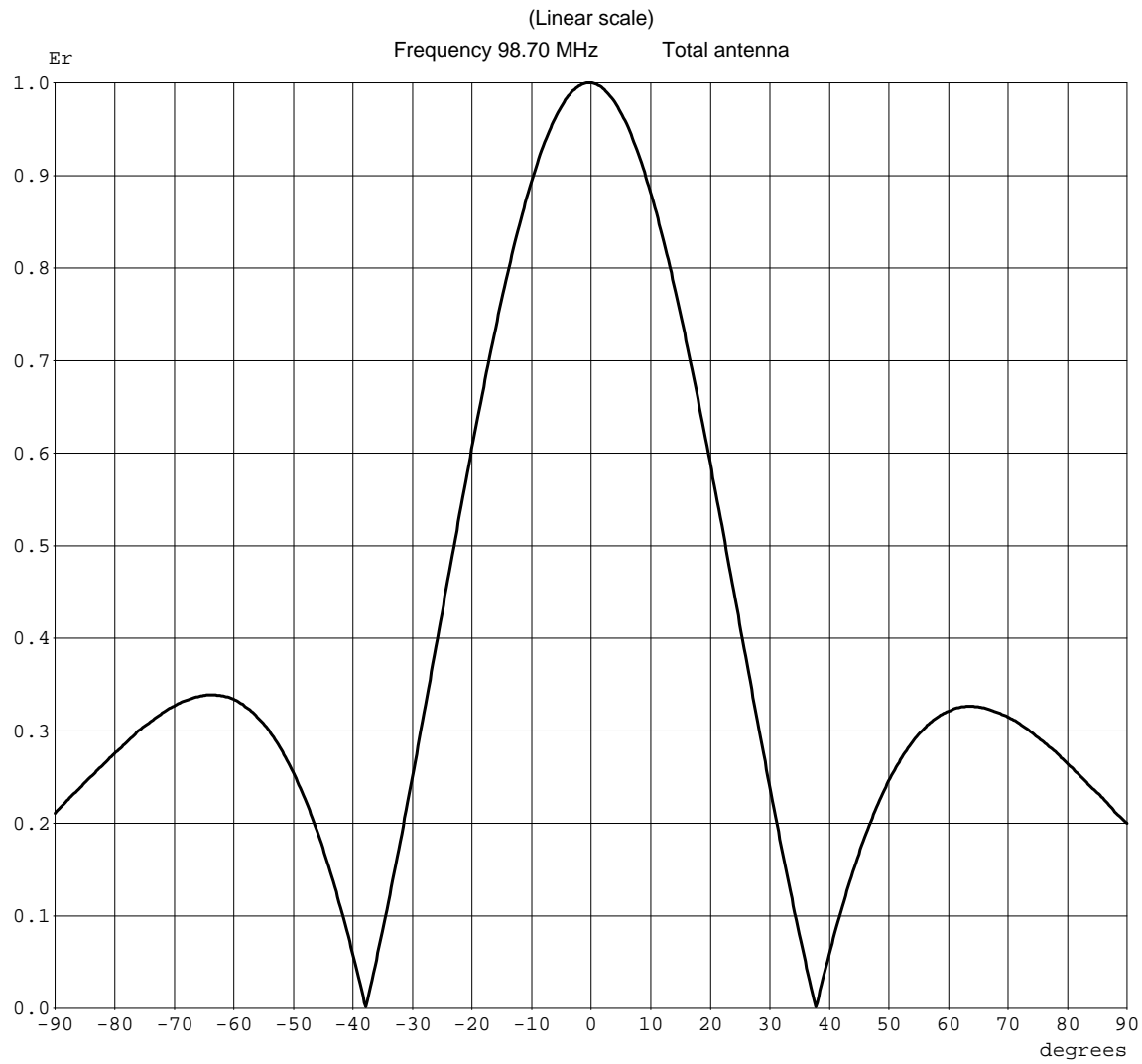
H.B.E.

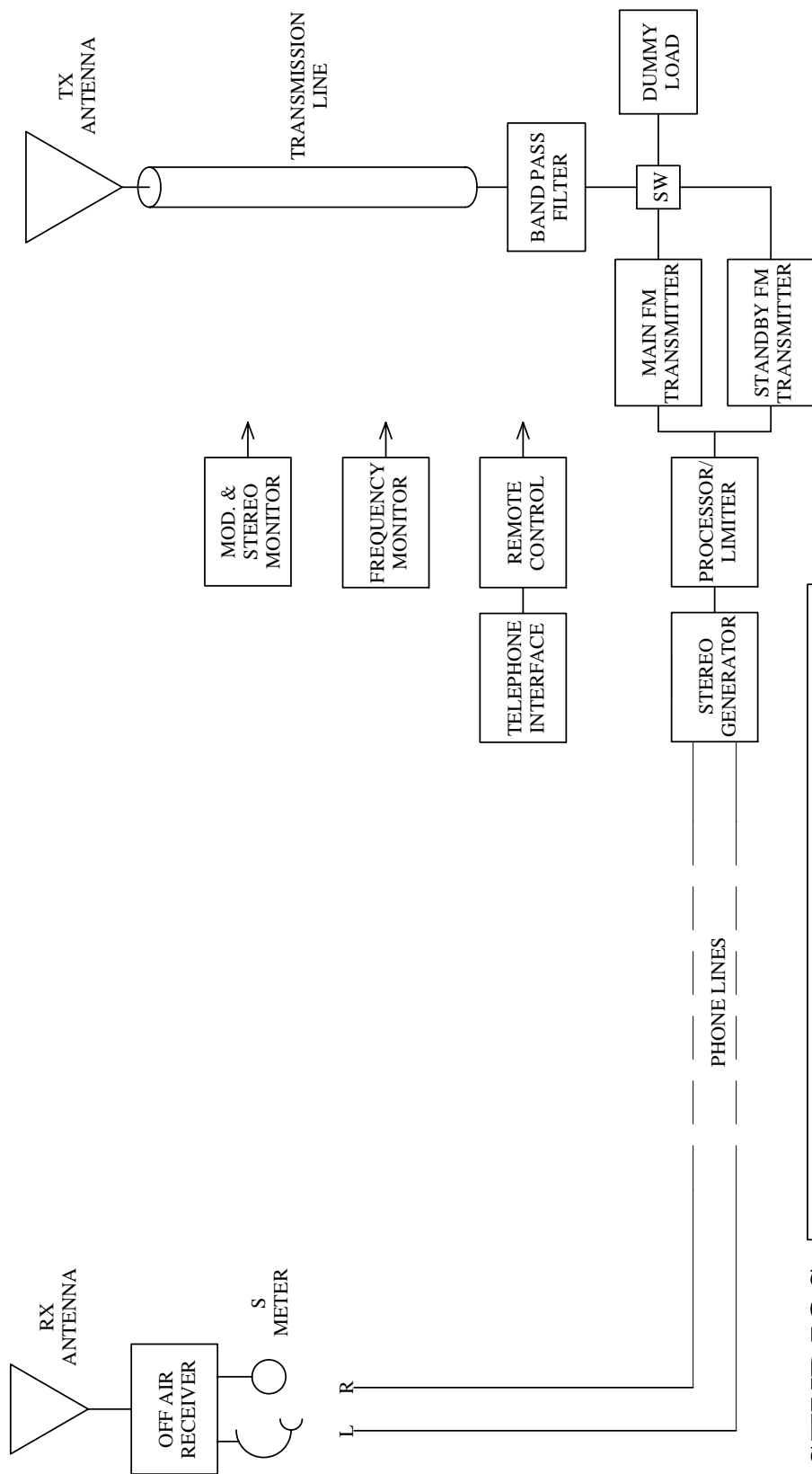
FEBRUARY 2010

FIGURE 2-3

SIRA Sistemi Radio	FMC-05/6 (2x3) CARN	Date : 10/02/2010 Oper : Appr.: Graph No.: 1
------------------------------	------------------------	---

THEORETICAL VERTICAL PATTERN





STUDIOS

TRANSMITTER

NEW-FM - TORONTO, ONTARIO

1000 W (MAX) 276.8 m 254B1 98.7 MHz

TRANSMITTING SYSTEM BLOCK DIAGRAM

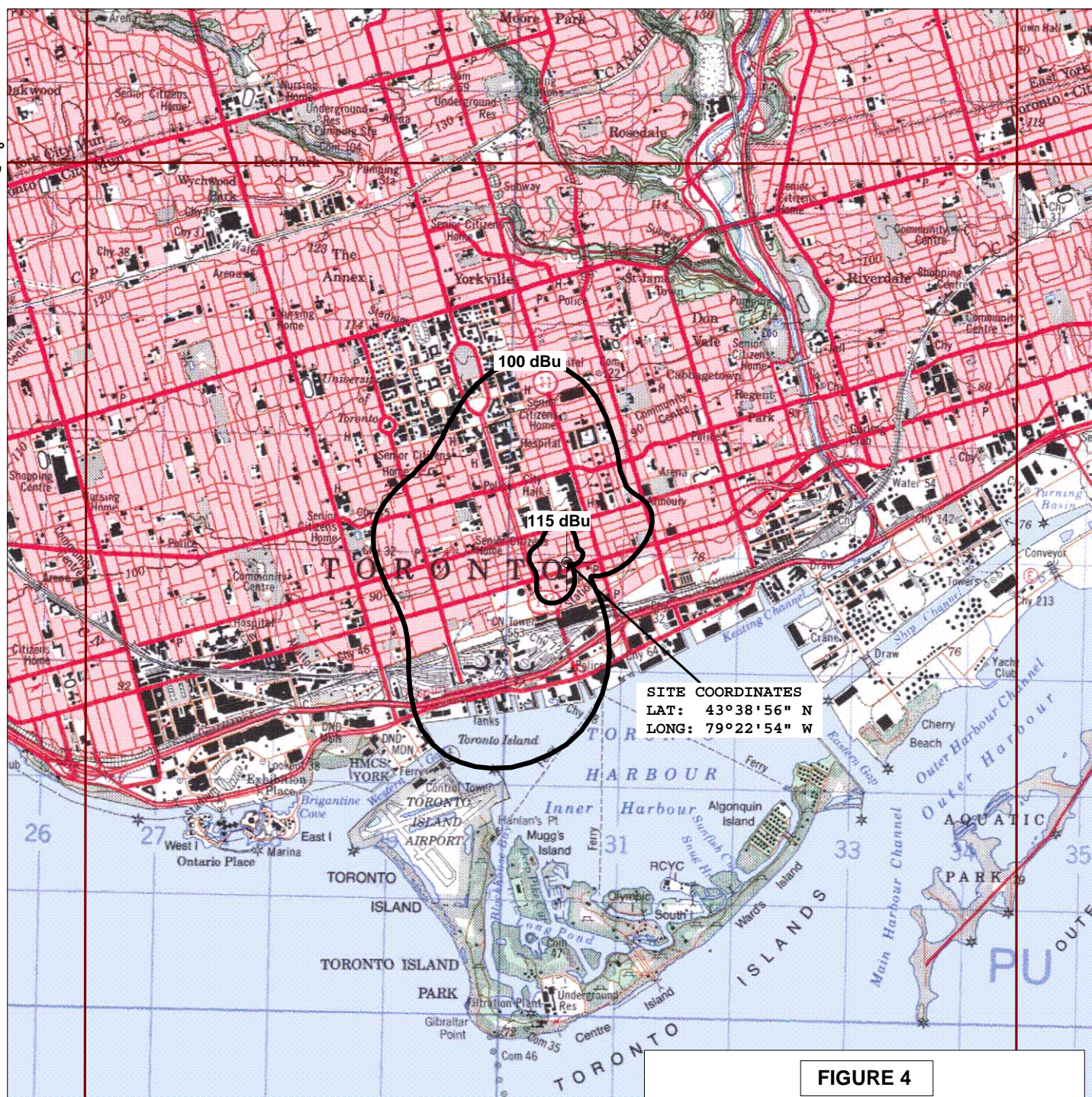
H.B.E.

FEBRUARY 2010

FIGURE 3

79°26'

79°20'

43°
41'43°
41'43°
36'43°
36'

Base map includes part of
NRC map sheet 30M/11

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FIGURE 4

NEW-FM - TORONTO, ONTARIO

PROPOSED
1000 W (MAX) 276.8 m 254B1 98.7 MHz

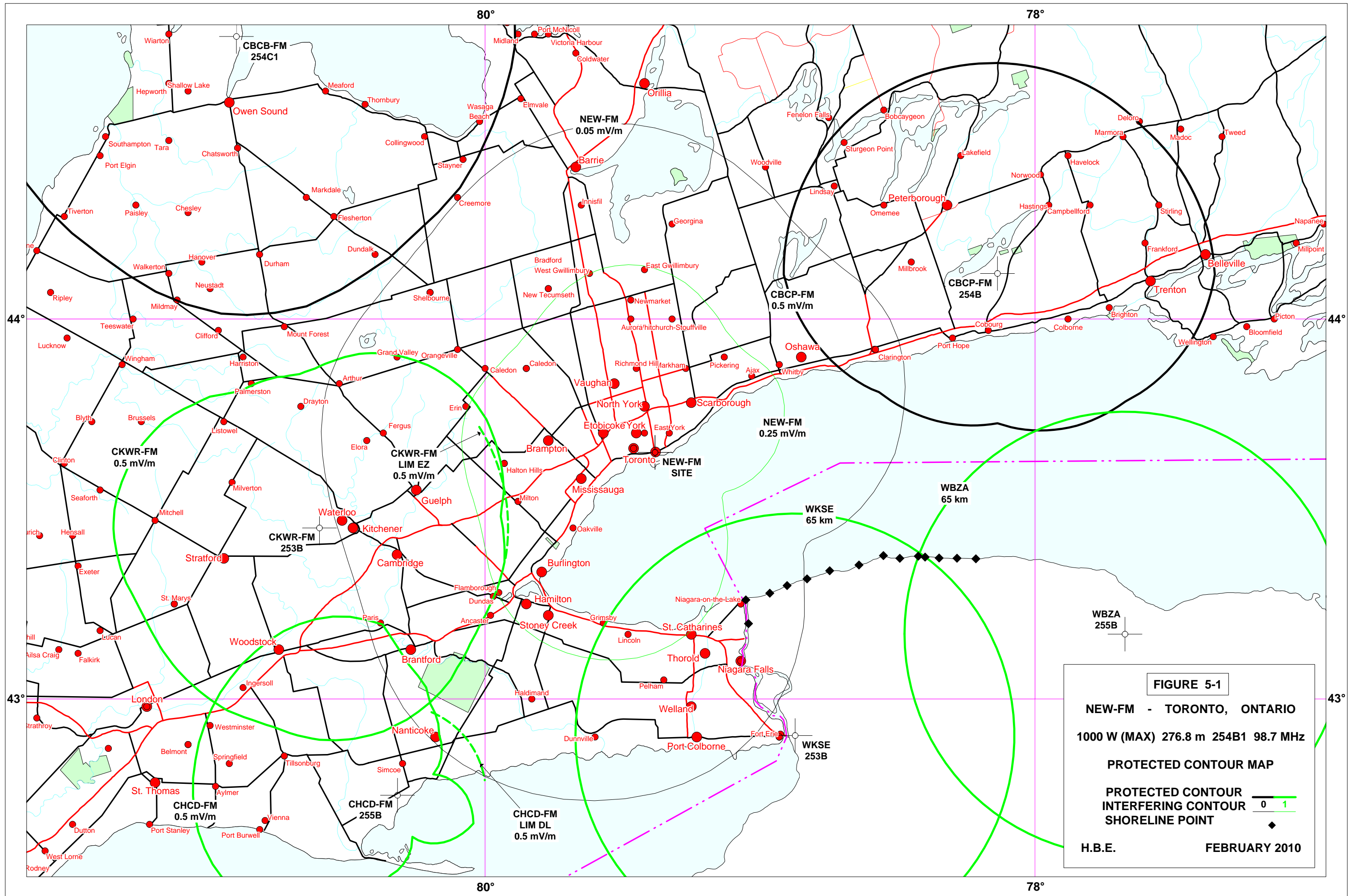
SITE ELEVATION MAP WITH
115 AND 100 dBu CONTOURS

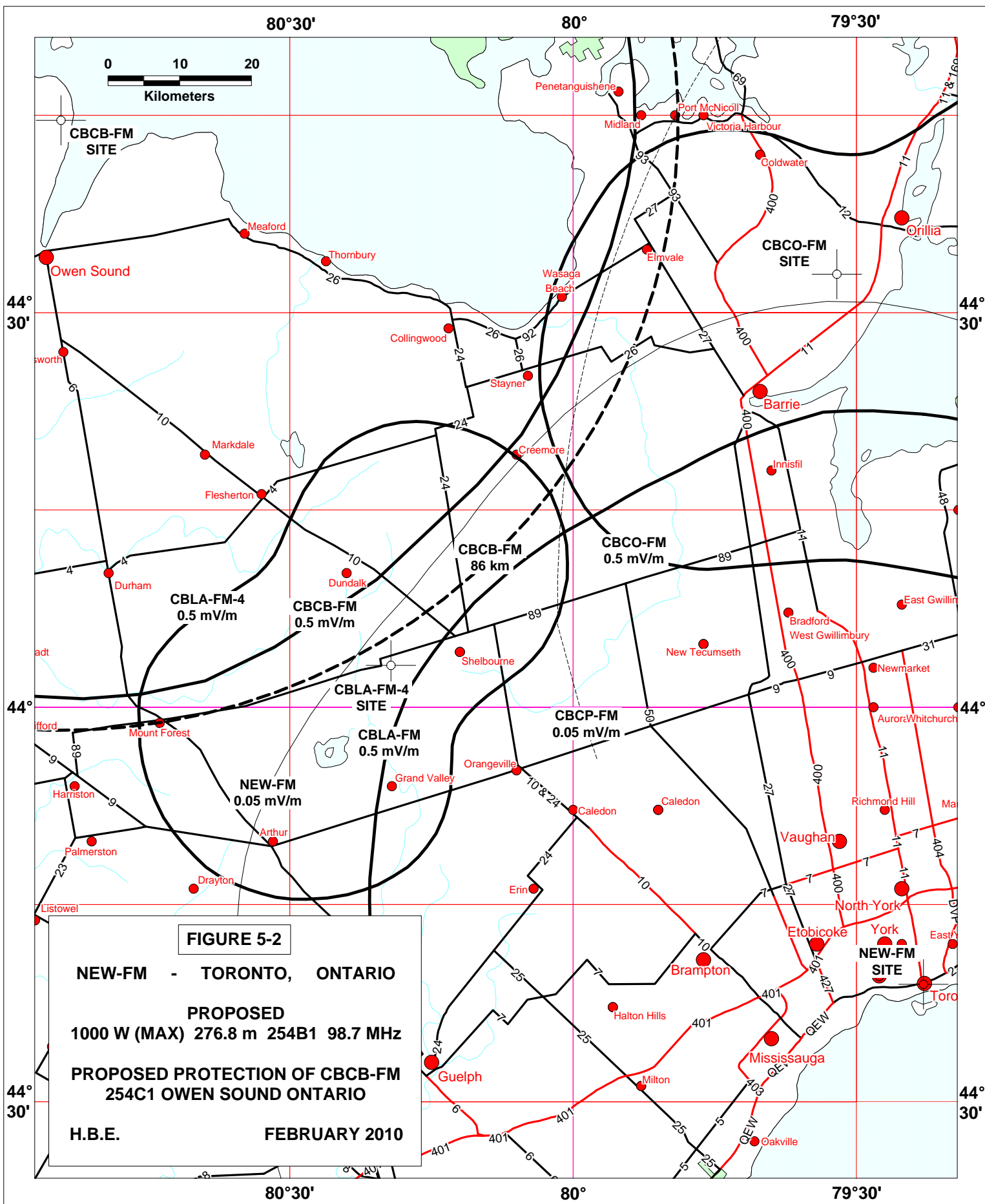
H.B.E.

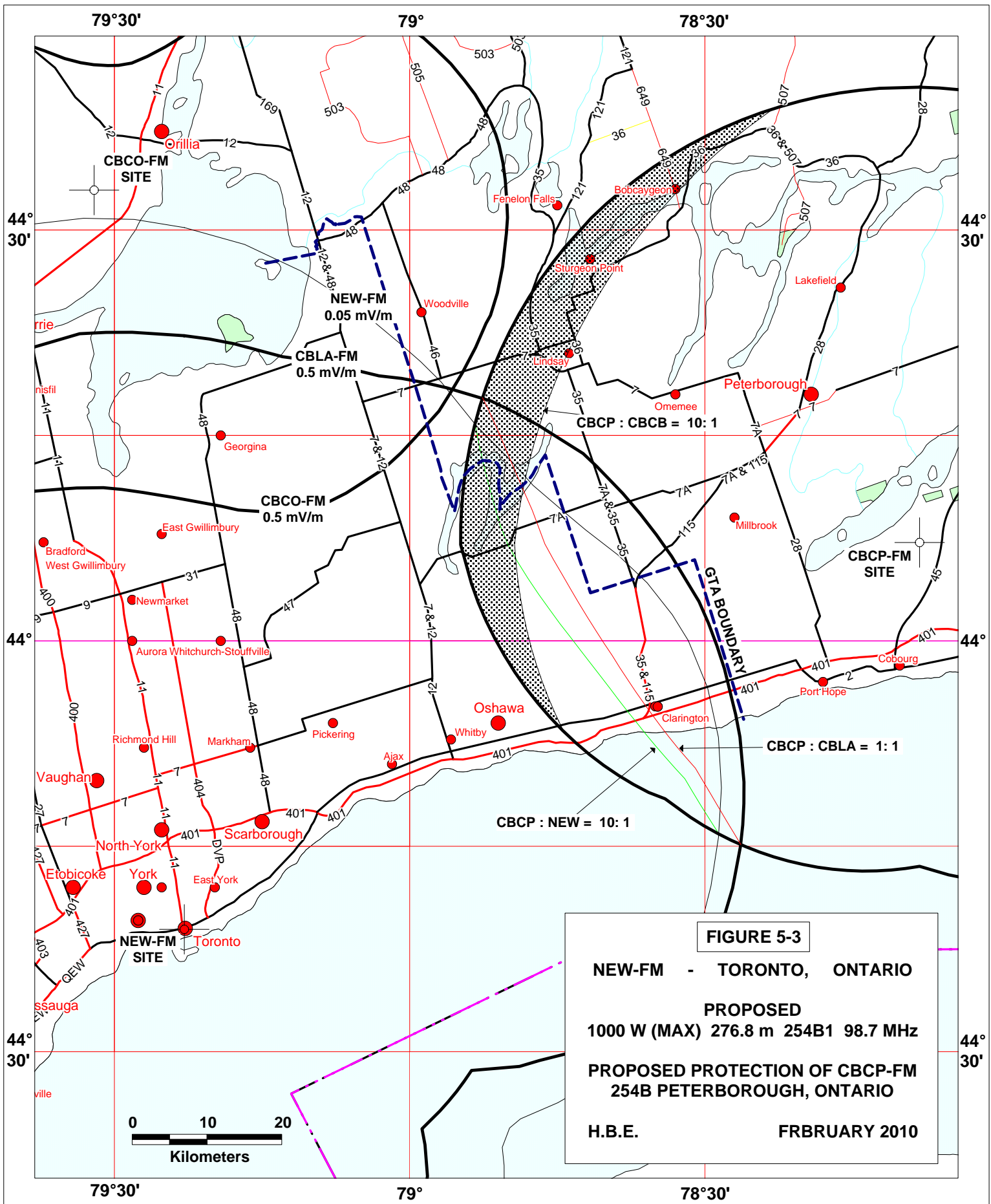
FEBRUARY 2010

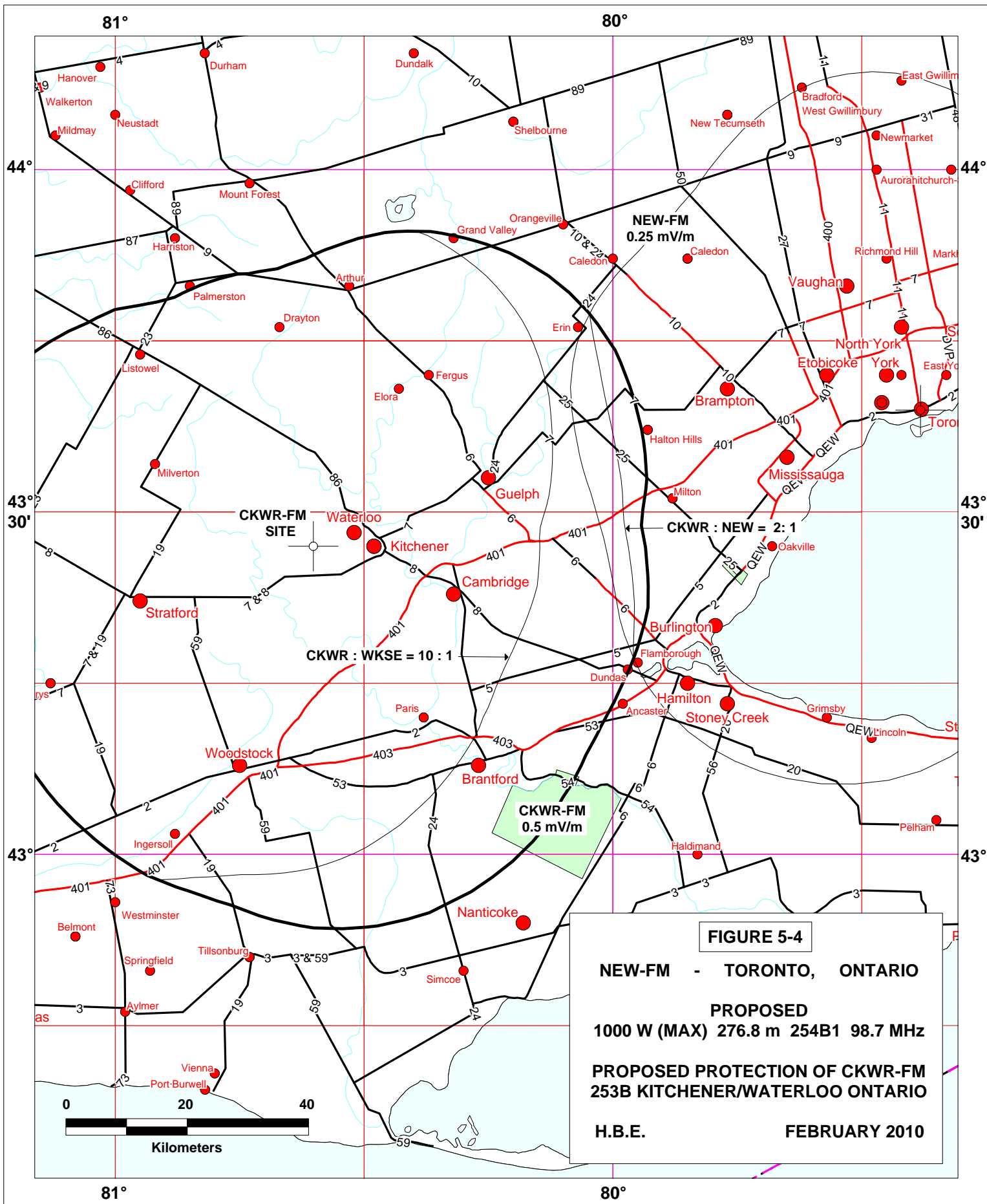
79°26'

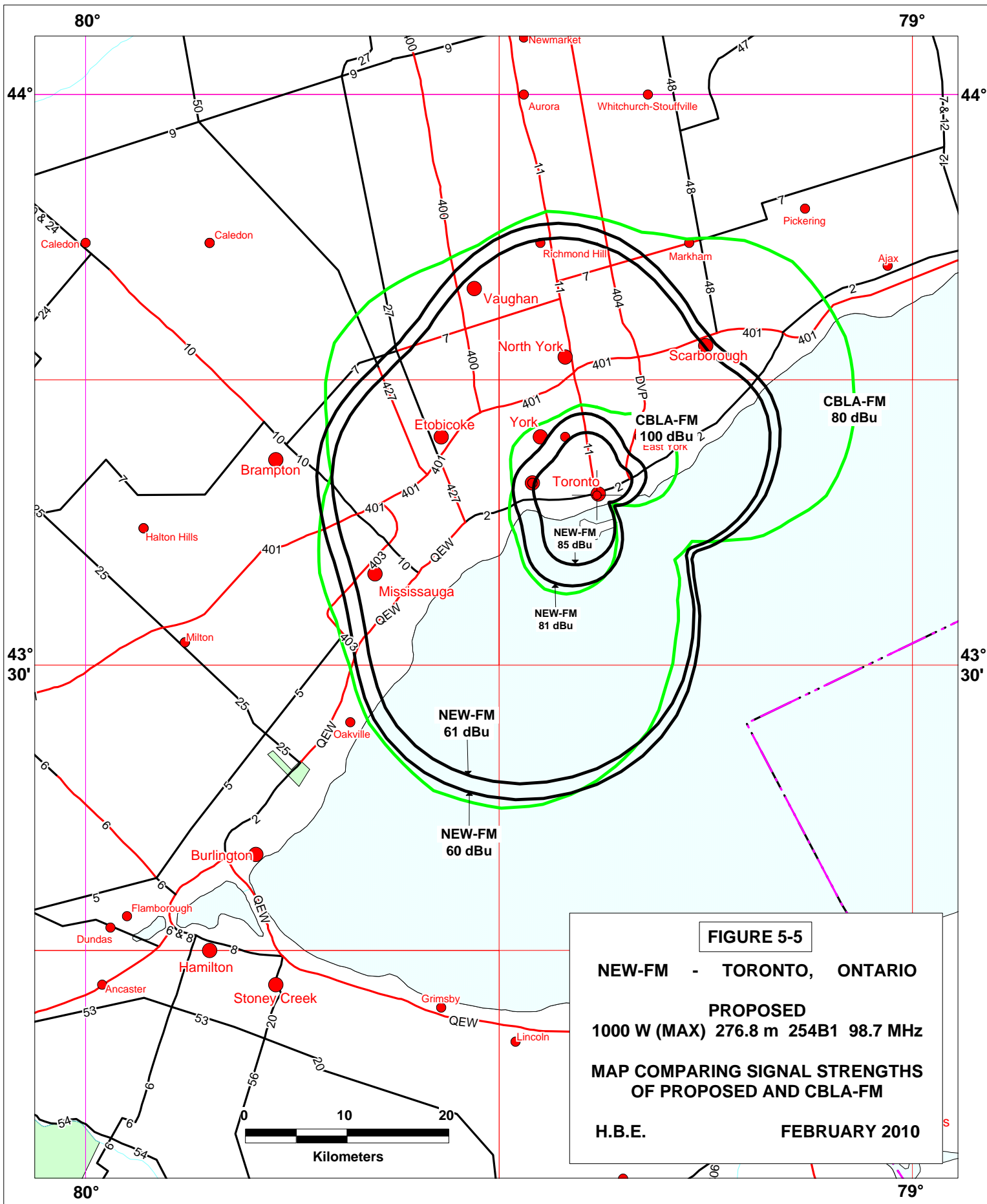
79°20'

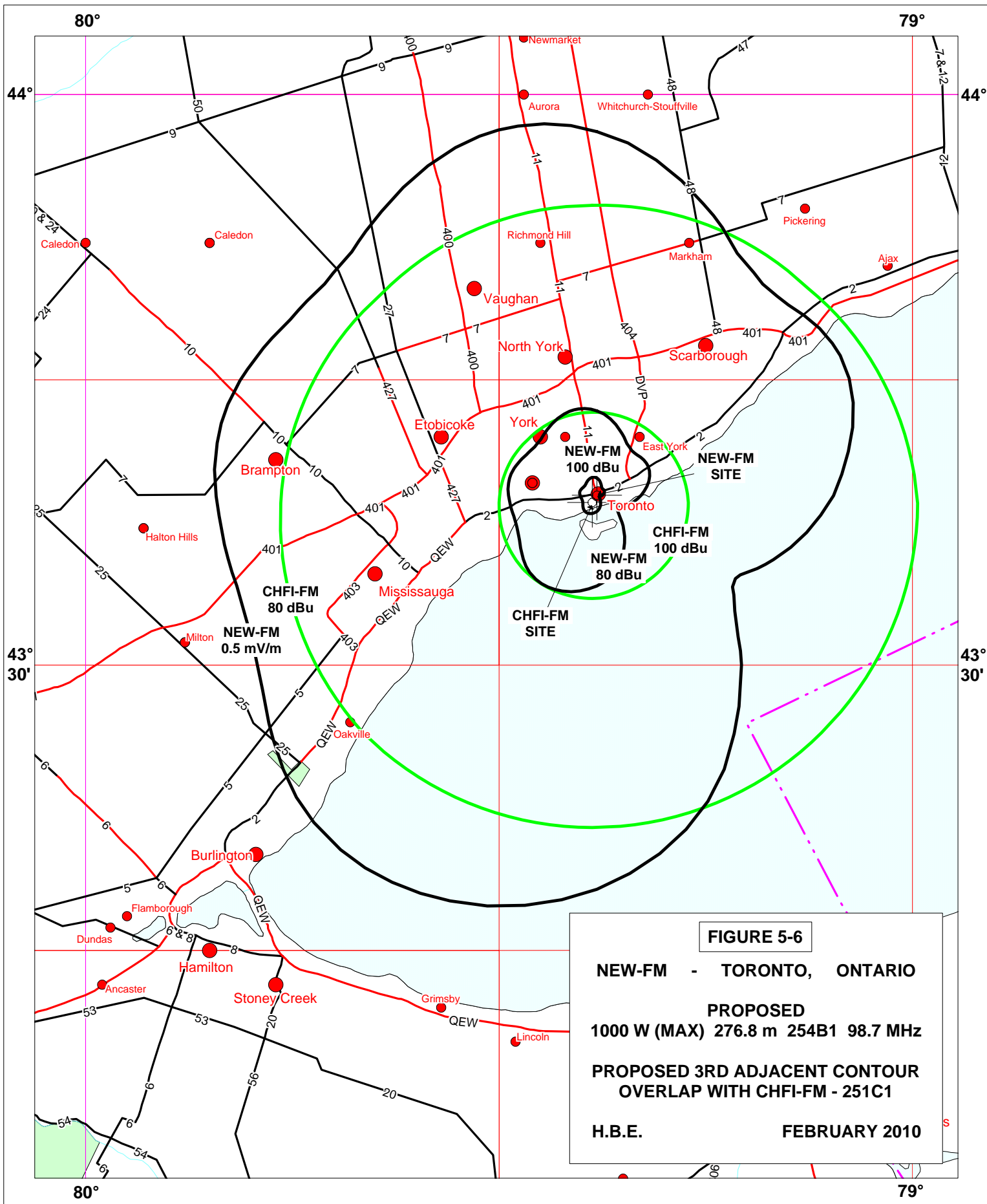




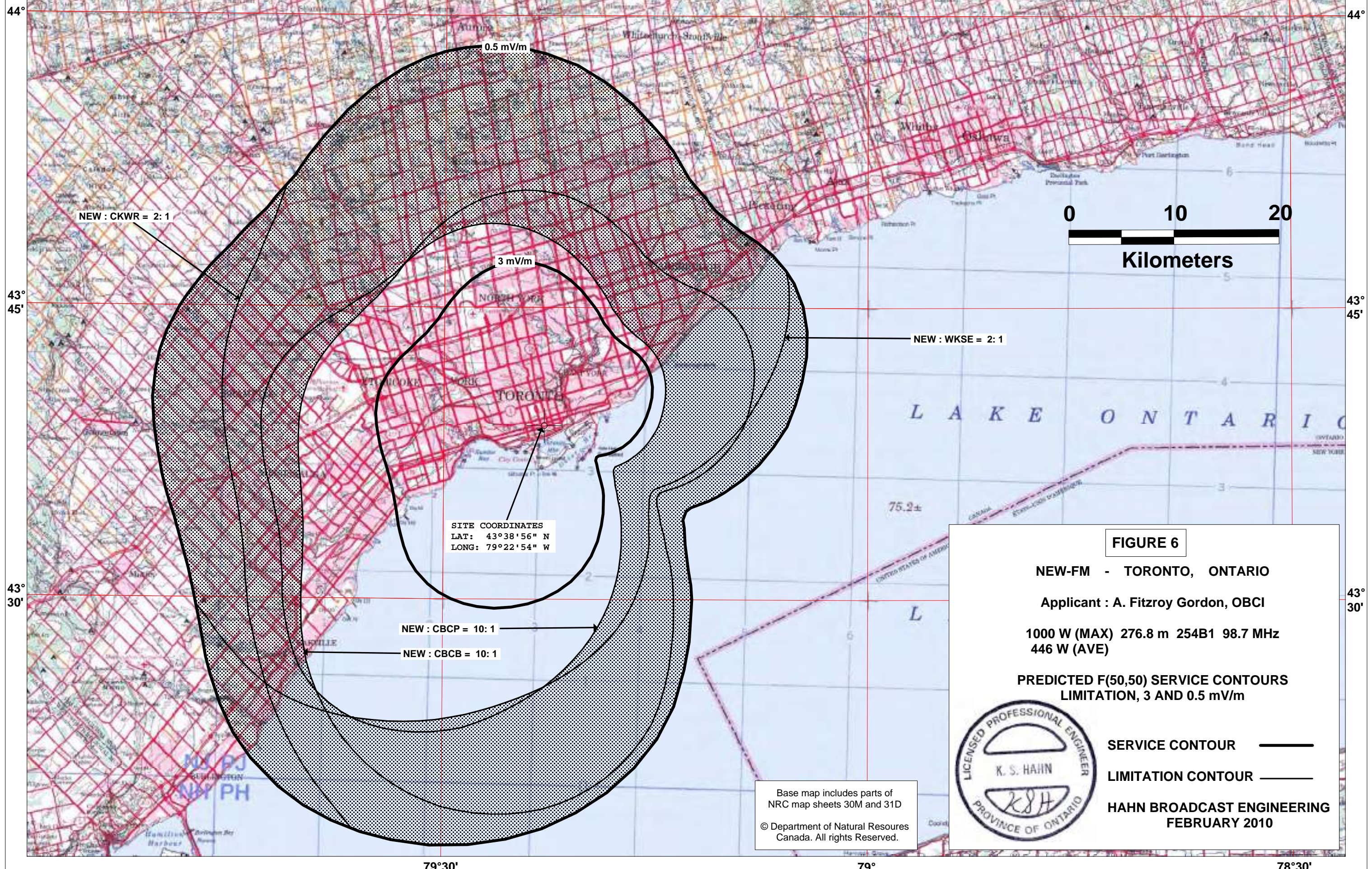








79°30' 79° 78°30'



SITE COORDINATES
LAT: 43°38'56" N
LONG: 79°22'54" W

0 10 20
Kilometers

FIGURE 6

NEW-FM - TORONTO, ONTARIO

Applicant : A. Fitzroy Gordon, OBCI

1000 W (MAX) 276.8 m 254B1 98.7 MHz
446 W (AVE)

PREDICTED F(50,50) SERVICE CONTOURS
LIMITATION, 3 AND 0.5 mV/m



SERVICE CONTOUR ———
LIMITATION CONTOUR ———
HAHN BROADCAST ENGINEERING
FEBRUARY 2010

Base map includes parts of
NRC map sheets 30M and 31D
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