

TECHNICAL EXHIBIT
AMENDMENT TO
APPLICATION FOR MODIFICATION OF CONSTRUCTION PERMIT
FCC FILE NO. BNPED-20090630ABE
RADIO STATION WICN
WORCESTER, MASSACHUSETTS
CH 213B1 1.1 KW (MAX-DA) 247 M

Technical Narrative

This Technical Exhibit was prepared on behalf of WICN Public Radio, Inc., licensee of noncommercial, educational FM (NCE-FM) station WICN. Station WICN is licensed (BNLED-20060501ANS) to operate on Channel 213B1 (90.5 MHz) at Worcester, Massachusetts, with a directional antenna maximum horizontal plane effective radiated power (ERP) of 8.1 kW and a vertical plane ERP of 7.2 kW using a Dielectric directional antenna system having a main lobe orientation of 255 degrees true and an antenna height above average terrain (HAAT) is 113 meters. In addition, WICN is also authorized by outstanding construction permit (BNPED-20070907ADU) to operate on channel 213B1 with a with a directional antenna maximum horizontal plane ERP of 18.2 kW and a vertical plane ERP of 13 kW using a directional antenna system having an antenna height above average terrain (HAAT) is 113 meters. Furthermore, WICN has a pending modification application (BNPED-20090630ABE) which proposes to change transmitter site and operate on channel 213B1 with a directional antenna maximum circularly polarized ERP of 1.1 kW and an HAAT of 247 meters.

The purpose of this instant application is to amend the pending WICN application for modification of construction permit by modifying the directional antenna pattern and to also request a waiver of Section 73.509, which is discussed below. Figure 1 provides the horizontal plane relative field pattern for the modified directional antenna.

City Coverage

Figure 2 is a map showing the 60 dBu contours for the licensed and herein proposed WICN operations. As indicated, the proposed 60 dBu will encompass 100% of the Worcester city limits (obtained from the 2000 Census) which comports with Section 73.515.

Allocation Study

Figure 3 provides a summary of an allocation study for the proposed facility. There are no intermediate frequency (IF) related facilities in close proximity to the proposed facility. The tabulation at Figure 3 lists the results of a numerical analysis of the potential for contour overlap for all nearby co-channel and first-, second-, and third-adjacent-channel facilities. For the purposes of the numerical study, the maximum HAAT and ERP values were

used in calculating the maximum distance to the predicted service and interfering contours.

Figure 4 is a map depicting the predicted protected and interfering contours of those stations close enough to warrant further study. This is based on the numerical analysis in Figure 3, where there is an indication of the potential for prohibited overlapping contours. As indicated in Figures 3 and 4, the Section 73.509 allocation requirements for the proposed facility are fully met with respect to all pertinent facilities with the exception of WYCM on channel 211A at Charlton, Massachusetts.. A waiver of Section 73.509 is requested with respect to WYCM.

Waiver of Section 73.509

Figure 5 is a map which depicts the WICN licensed and proposed 60 dBu protected contours and the interfering 100 dBu contour of second adjacent channel station WYCM (formerly WBPV) on channel 211A at Charlton, Massachusetts (BLED-19840702DM). As indicated, the licensed WICN 60 dBu contour overlaps the WYCM 100 dBu contour and the proposed WICN 60 dBu contour would slightly increase the prohibited overlap area. Therefore, a waiver of Section 73.509 is respectfully requested.

In support of the waiver, it is noted that WYCM's 100 dBu is almost completely engulfed ("donuted") by WICN's licensed 60 dBu due to a "grandfathered" overlap situation. The increased overlap resulting from the proposed operation is considered to be *de minimus* as the area of overlap (received interference) would increase by only 0.1 square kilometers, from 1.4 square kilometers to 1.5 square kilometers. Furthermore, the proposed area of overlap would represent only 0.079% of the total area within the proposed WICN 60 dBu contour (1,950 square kilometers). Also, as shown on Figure 5 the proposed WICN operation will not result in an increase in the population within the 100 dBu overlap area (494 persons, 2000 Census) based on consideration of population centroids. Additionally, the proposed WICN 100 dBu interfering contour does not cause overlap (interference) to the WYCM 60 dBu protected contour as shown on Figure 4.

Also, as indicated on Figure 6 the proposed WICN operation will entirely eliminate grandfathered interfering 40 dBu contour overlap (interference caused) with the protected 60 dBu contour of co-channel station WPKT on channel 213B at Meriden, Connecticut (BLED-19910222KC). The existing 40 dBu contour overlap area contains 8,420 persons (2000 Census) within 75 square kilometers.

Additionally, the FCC predicted 60 dBu coverage area of WICN will be increased from 1,840 square kilometers to 1,905 square kilometers. It is also noted that the

move to the new tower location will improve line-of-sight coverage which is supported by a Longley-Rice 60 dBu coverage comparison which indicates that there will be an increase in 60 dBu coverage to approximately 332,658 persons.

Finally, the FCC's decision in Educational Information Corporation, 6 FCC Rcd 2207 (1991), regarding second and third adjacent channel overlap is analogous to this instant situation.¹

Predicted Coverage and Interfering Contours

The locations of the predicted coverage and interfering contours were calculated in accordance with Section 73.313 of the FCC Rules using the Figures 1 and 1a of Section 73.333. The average terrain elevations from 3 to 16 km were computed every 1-degree of azimuth using the U.S.G.S. 30-second terrain database. The overall antenna HAAT was determined according to the provisions of Section 73.313 of the FCC Rules. The antenna radiation center HAAT in each radial direction and the ERP were used in conjunction with the propagation prediction curves of Section 73.333 to determine the distances to contours.

Canadian Allocation Study

The proposed site is 302 kilometers from the closest point of the Canadian Border. The 34 dBu F(50,10) Canadian interfering contour for the proposed WICN operation is shown on Figure 7. This contour does not extend into Canada and, thus, no Canadian impact is expected to occur. Therefore, the proposal appears to comply with the U.S./Canada FM Agreement. If necessary, it is respectfully requested that the Commission coordinate the proposal with Canada.

TV Channel 6 Protection

It is required that noncommercial educational FM facilities provide interference protection to affected TV channel 6 facilities as defined in Section 73.525. Pursuant to Section 73.525 (a) (1), all TV channel 6 facilities within 193 kilometers of a proposed channel 213 FM facility must be protected. Station WLNE-TV is the only station which WICN would be involved in normally prohibited contour overlap. In accordance with Section 73.525, a noncommercial educational FM modification application that is accompanied by a written agreement between the NCE-FM applicant and the affected TV channel 6 broadcast station will

¹ See also May 9, 1994 letter from Dennis Williams, Chief, FM Branch, Audio Services Division, Mass Media Bureau regarding WEEE(FM), Cherry Hill, NJ, Broadcast Learning Center, Inc., BPED-930422MA.

be accepted. Therefore, the applicant has obtained a written agreement with the licensee of WLNE-TV stating that it concurs with the NCE-FM facilities. A copy of this agreement is attached elsewhere to this application.

Environmental Considerations

The proposed WICN channel 213B1 facilities were evaluated in terms of potential radiofrequency radiation exposure at 2 meters above ground level in accordance with the OST Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation". This Bulletin provides assistance in determining whether FCC-regulated transmitting facilities, operations or devices comply with limits for human exposure to radiofrequency (RF) electromagnetic fields.

The proposed antenna will be mounted at the 63-meter level on the existing tower structure. The calculated power density at 2 meters above ground level at the base of the tower was calculated using the appropriate equation contained in the Bulletin. Using a "greater than expected" vertical relative field value of 0.25 for the proposed directional antenna (see Figure 8), the total ERP of 2.2 kW (H+V) and an antenna center of radiation height above ground level of 63 meters, the calculated power density at two meters above ground level at the base of the tower is 0.0012 milliwatts per square centimeter (mW/cm^2), or 0.62% of the Commission's recommended limit applicable to uncontrolled exposure areas ($0.2 \text{ mW}/\text{cm}^2$ for FM channel 213). Therefore, based on the responsibility threshold of 5%, the proposal will comply with the RF emission rules.

Access to the tower site will be restricted. Furthermore, the site will be appropriately marked with RFR warning signs. In addition, as this is a multi-user site, procedures will be in effect in the event that workers or other authorized personnel enter the restricted area or climb the tower to ensure that appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such procedures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the station is at reduced power or shut down.

Finally, it is noted that this technical exhibit only addresses the potential for radiofrequency electromagnetic field exposure.

A handwritten signature in black ink, appearing to read "W. Jeffrey Reynolds". The signature is fluid and cursive, with the first name "W." and last name "Reynolds" clearly distinguishable.

W. Jeffrey Reynolds

du Treil, Lundin & Rackley, Inc.
201 Fletcher Avenue
Sarasota, FL 34237-6019
(941) 329-6000
JEFF@DLR.COM

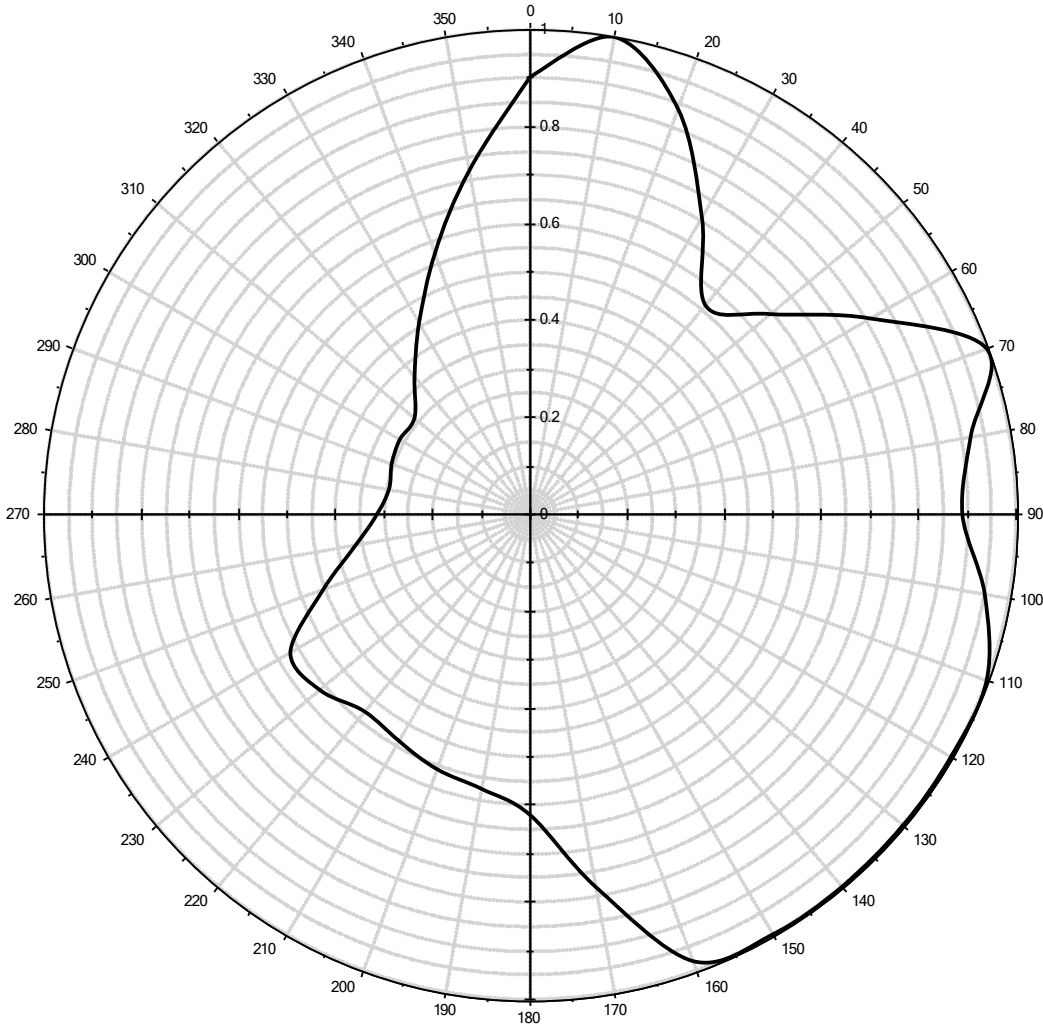
August 27, 2009



DA Inquiry

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida

Antenna Pattern: Antenna ID: 800228



Note: display reflects rotation of 0.00°

Antenna Details:

0°	0.904	60°	0.810	120°	1.000	180°	0.620	240°	0.569	300°	0.310
10°	1.000	70°	1.000	130°	1.000	190°	0.575	250°	0.453	310°	0.310
20°	0.890	80°	0.920	140°	1.000	200°	0.559	260°	0.365	320°	0.370
30°	0.708	90°	0.890	150°	1.000	210°	0.540	270°	0.315	330°	0.456
40°	0.563	100°	0.950	160°	0.980	220°	0.530	280°	0.295	340°	0.574
50°	0.644	110°	1.000	170°	0.780	230°	0.564	290°	0.303	350°	0.721

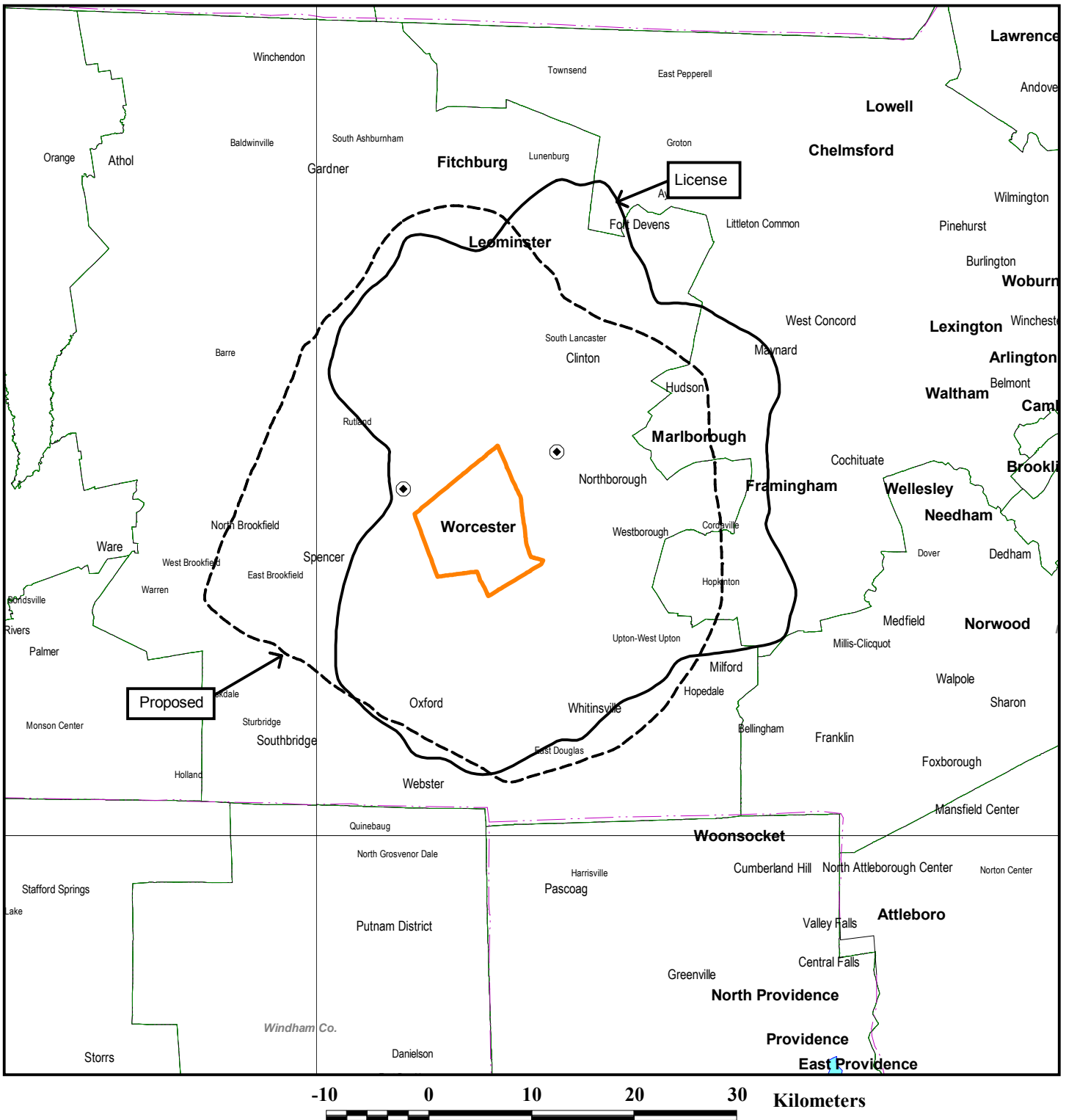
Antenna Make: NEW

Standard Pattern:

Antenna Model: WICN HYPOTHETICAL

Last Change Date:

Figure 2



FCC PREDICTED 60 DBU CONTOURS

FM STATION WICN
 WORCESTER, MASSACHUSETTS
 CH 213B1 1.1 KW (MAX-DA) 247 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

CDBS ALLOCATION STUDY

Job Title: Johnstown CP Site
Channel: 213
ERP = 1.1 kW HAAT = 324 m

Separation Buffer: 50 km
Coordinates: 42-18-11 71-53-52

Callsign ID	City St.	File Status	Channel Freq	ERP(kW) HAAT (m)	DA ID	Latitude Longitude	73 215	Bear (deg)	Dist. (km)	Req. (km)
NEW 176684	NEW SALEM MA	BNPED APP	210 A 89.9	0.18 145	N	42-30-23 072-19-52	N	302.6	42.22	34.2
NEW Proposed	60.0 dBu	Desired = 14.3 km	Proposed 60.0 dBu	Desired = 33.2 km	NEW	100.0 dbu	Undesired = 2.1			Close
NEW 172383	ATHOL MA	BNPED APP	210 A 89.9	1.8 229	Y	42-30-22 072-20-42	N	301.7	43.18	35.7
NEW Proposed	60.0 dBu	Desired = 31.5 km	Proposed 60.0 dBu	Desired = 33.2 km	NEW	100.0 dbu	Undesired = 2.1			Close
NEW 174754	ATHOL MA	BNPED APP	210 A 89.9	2.0 64	N	42-34-16 072-19-07	N	310.9	45.67	35.0
NEW Proposed	60.0 dBu	Desired = 17.6 km	Proposed 60.0 dBu	Desired = 33.2 km	NEW	100.0 dbu	Undesired = 1.7			Close
WYCM 4102	CHARLTON MA	BLEDD LIC	211 A 90.1	0.1 164	N	42-08-01 071-57-26	N	194.6	19.45	33.9
WYCM Proposed	60.0 dBu	Desired = 13.2 km	Proposed 60.0 dBu	Desired = 33.2 km	WYCM	100.0 dbu	Undesired = .7			Short ¹
NEW 177374	FITCHBURG MA	BNPED CP	211 A 90.1	0.1 100	Y	42-35-12 071-51-12	N	6.6	31.72	33.9
NEW Proposed	60.0 dBu	Desired = 10.3 km	Proposed 60.0 dBu	Desired = 33.2 km	NEW	100.0 dbu	Undesired = .7			Short ²
WZBC 68240	NEWTON MA	BMLED LIC	212 A 90.3	1.0 98	N	42-20-05 071-10-31	N	86.4	59.67	68.5
WZBC Proposed	60.0 dBu	Desired = 18.4 km	Proposed 60.0 dBu	Desired = 33.2 km	WZBC	54.0 dbu	Undesired = 27.1			Short ³
WRIU 69206	KINGSTON RI	BLEDD LIC	212 A 90.3	3.4 158		41-29-52 071-31-43	N	161.0	94.54	80.6
WRIU Proposed	60.0 dBu	Desired = 30.5 km	Proposed 60.0 dBu	Desired = 33.2 km	WRIU	54.0 dbu	Undesired = 46.0			Close
WAMC-FM 70849	ALBANY NY	BMLED LIC	212 B 90.3	10.0 821	N	42-38-14 073-10-07	N	290.0	110.91	143.2
WAMC-FM Proposed	60.0 dBu	Desired = 75.4 km	Proposed 60.0 dBu	Desired = 33.2 km	WAMC-FM	54.0 dbu	Undesired = 110.0			Short ³
WICN 72379	WORCESTER MA	BMPED APP	213 B1 90.5	1.1 324	Y	42-18-11 071-53-52	N	90.0		
WICN 72379	WORCESTER MA	BMLED LIC	213 B1 90.5	8.1 166	Y	42-20-09 071-42-57	N	76.2		
WICN 72379	WORCESTER MA	BPED CP	213 B1 90.5	18.2 166	Y	42-20-09 071-42-57	N	76.2		

¹ Waiver of Section 73.509 requested. See Technical Narrative and Figure 5.

² Sufficient contour clearance - detailed study not warranted.

³ No contour overlap - see Figure 4.

Callsign ID	City St.	File Status	File Number	Channel Freq	ERP(kW) HAAT(m)	DA ID	Latitude Longitude	73 215	Bear (deg)	Dist. (km)	Req. (km)
NEW 175362	DERRY NH	BNPED APP	BNPED 20071019AHG	213 A 90.5	0.15 178	Y	42-53-07 071-16-03	N	38.3	82.82 -22.01	104.8 Short ⁴
NEW Proposed	60.0 60.0	dBu dBu	Desired = 15.3 Desired = 33.2	km km	Proposed NEW		40.0 40.0	dbu dbu	Undesired = 89.6 Undesired = 49.7		
NEW 173234	AUBURN NH	BNPED APP	BNPED 20071012AOO	213 A 90.5	0.1 43	N	42-57-25 071-21-39.1	N	31.0	84.95 -11.31	96.3 Short ³
NEW Proposed	60.0 60.0	dBu dBu	Desired = 6.7 Desired = 33.2	km km	Proposed NEW		40.0 40.0	dbu dbu	Undesired = 89.6 Undesired = 22.4		
WSPS 62166	CONCORD NH	BLED LIC	BLED 19830811AD	213 A 90.5	0.2 27	N	43-11-37 071-34-29	N	14.8	102.4 6.13	96.3 Close
WSPS Proposed	60.0 60.0	dBu dBu	Desired = 6.7 Desired = 33.2	km km	Proposed WSPS		40.0 40.0	dbu dbu	Undesired = 89.6 Undesired = 22.4		
WPEA 68250	EXETER NH	BLED LIC	BLED 19821213AI	213 A 90.5	0.1 35	N	42-58-44 070-57-00	N	45.6	108.07 12.46	95.6 Close
WPEA Proposed	60.0 60.0	dBu dBu	Desired = 6.0 Desired = 33.2	km km	Proposed WPEA		40.0 40.0	dbu dbu	Undesired = 89.6 Undesired = 20.1		
WPKT 13627	MERIDEN CT	BLED LIC	BLED 19910222KC	213 B 90.5	18.5 314	Y	41-33-42 072-50-41	N	223.9	113.8 -54.23	168.0 Short ³
WPKT Proposed	60.0 60.0	dBu dBu	Desired = 56.7 Desired = 33.2	km km	Proposed WPKT		40.0 40.0	dbu dbu	Undesired = 89.6 Undesired = 134.8		
WSMA 122202	SCITUATE MA	BLED LIC	BLED 20060331ASV	213 B1 90.5	7.7 164	Y	41-56-02 070-35-10	N	110.3	115.97 -17.45	133.4 Short ³
WSMA Proposed	60.0 60.0	dBu dBu	Desired = 37.7 Desired = 33.2	km km	Proposed WSMA		40.0 40.0	dbu dbu	Undesired = 89.6 Undesired = 100.2		
WSMA 122202	SCITUATE MA	BMLED APP	BMLED 20080516AAL	213 B1 90.5	7.7 164	Y	41-56-02 070-35-10	N	110.3	115.97 -17.45	133.4 Short ³
WSMA Proposed	60.0 60.0	dBu dBu	Desired = 37.7 Desired = 33.2	km km	Proposed WSMA		40.0 40.0	dbu dbu	Undesired = 89.6 Undesired = 100.2		
WTCC 62018	SPRINGFIELD MA	BMLED LIC	BMLED 20070314ADO	214 A 90.7	4.0 73	N	42-06-32 072-34-45	N	249.2	60.26 -12.10	72.4 Short ⁵
WTCC Proposed	60.0 60.0	dBu dBu	Desired = 22.3 Desired = 33.2	km km	Proposed WTCC		54.0 54.0	dbu dbu	Undesired = 50.1 Undesired = 33.3		
NEW 171698	PLAINFIELD CT	BNPED APP	BNPED 20071022AVO	214 A 90.7	0.9 168	Y	41-42-45.6 071-49-08.7	N	174.3	65.9 -7.44	73.3 Short ⁵
NEW Proposed	60.0 60.0	dBu dBu	Desired = 23.2 Desired = 33.2	km km	Proposed NEW		54.0 54.0	dbu dbu	Undesired = 50.1 Undesired = 34.7		
NEW 173091	WAUREGAN CT	BNPED APP	BNPED 20071017AAX	214 A 90.7	1.152 119	Y	41-40-29 071-52-47	N	178.8	69.81 -1.34	71.1 Short ⁵
NEW Proposed	60.0 60.0	dBu dBu	Desired = 21.0 Desired = 33.2	km km	Proposed NEW		54.0 54.0	dbu dbu	Undesired = 50.1 Undesired = 31.1		
NEW 175975	DANIELSON CT	BNPED APP	BNPED 20071019ALZ	214 A 90.7	1.7 185	Y	41-39-44 071-50-51	N	176.6	71.3 -6.74	78.0 Short ⁵
NEW Proposed	60.0 60.0	dBu dBu	Desired = 27.9 Desired = 33.2	km km	Proposed NEW		54.0 54.0	dbu dbu	Undesired = 50.1 Undesired = 42.1		
NEW 159759	HOPE VALLE RI	BNPED APP	BNPED 20071012ADV	214 A 90.7	0.53 146	Y	41-38-27 071-45-12	N	170.7	74.52 5.25	69.3 Close
NEW Proposed	60.0 60.0	dBu dBu	Desired = 19.2 Desired = 33.2	km km	Proposed NEW		54.0 54.0	dbu dbu	Undesired = 50.1 Undesired = 28.3		

⁴ No contour overlap - see Figure 4.

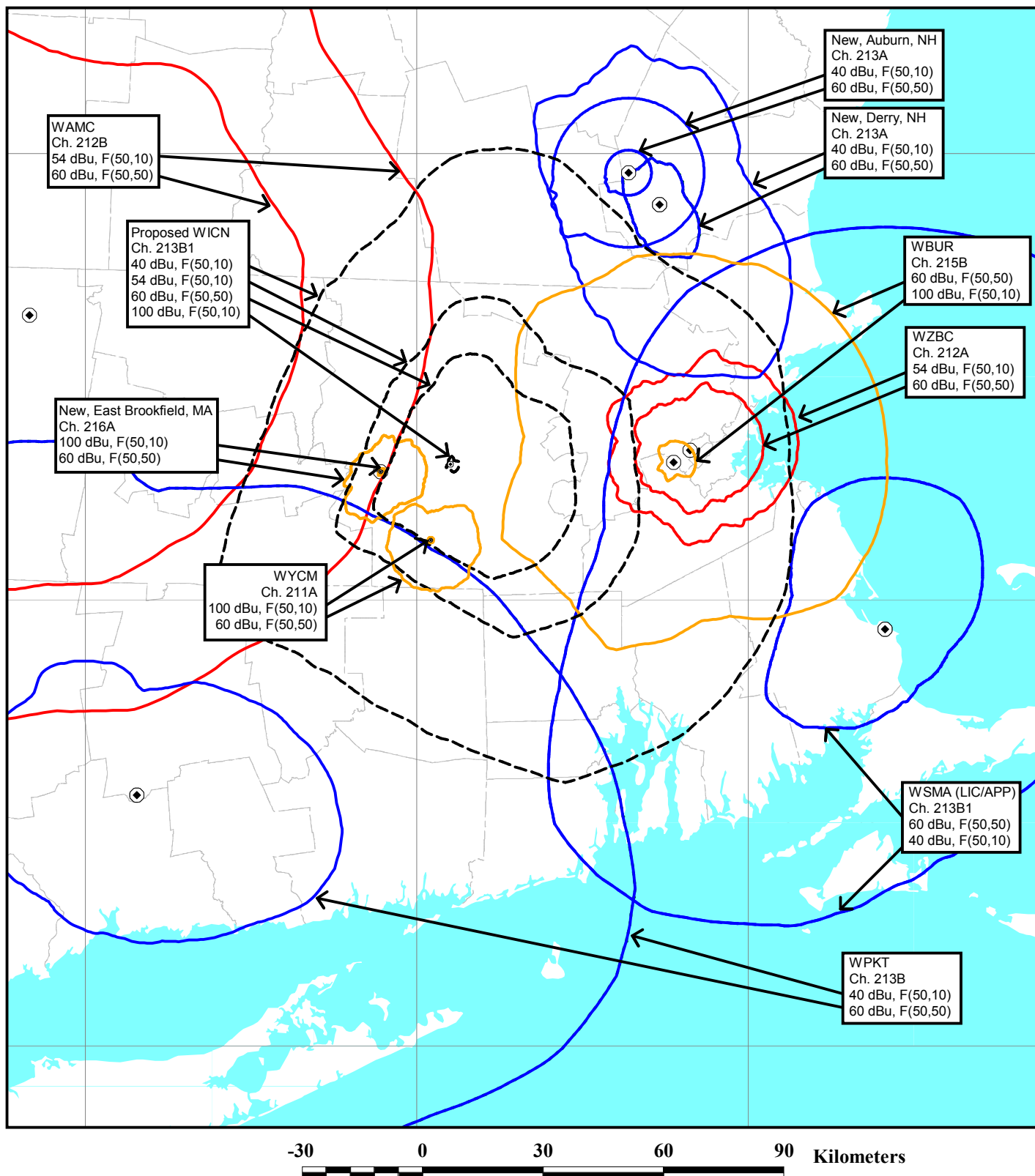
⁵ Sufficient contour clearance - detailed study not warranted.

Callsign ID	City St.	File Status Number	Channel Freq	ERP(kW) HAAT(m)	DA ID	Latitude Longitude	73 215	Bear (deg)	Dist. (km)	Req. (km)
WLMW 35251	MANCHESTER NH	BLED LIC	214 A 19970829KB 90.7	0.015 265	Y	42-58-59 071-35-25	N	18.3	79.64 18.98	60.7 Clear
WLMW Proposed	60.0	dBu	Desired = 10.5 km Desired = 33.2 km	Proposed WLMW		54.0 54.0	dbu	Undesired = 50.1 Undesired = 14.7		
WEVN 48440	KEENE NH	BLED LIC	214 B1 20030815ADI 90.7	1.5 412	Y	43-02-00 072-22-04	N	334.8	89.81 -3.82	93.6 Short ⁶
WEVN Proposed	60.0	dBu	Desired = 39.8 km Desired = 33.2 km	Proposed WEVN		54.0 54.0	dbu	Undesired = 50.1 Undesired = 60.4		
WBUR-FM 68241	BOSTON MA	BLED LIC	215 B 20050812AGN 90.9	12.0 333	Y	42-18-27 071-13-27	N	89.3	55.55 -0.52	56.1 Short ⁷
WBUR-FM Proposed	60.0	dBu	Desired = 53.9 km Desired = 33.2 km	Proposed WBUR-FM		100.0 100.0	dbu	Undesired = 2.1 Undesired = 5.5		
NEW 171988	EAST BROOK MA	BNPED APP	216 A 20071022AUG 91.1	0.45 138	Y	42-17-13 072-06-32	N	264.2	17.5 -17.09	34.6 Short ⁷
NEW Proposed	60.0	dBu	Desired = 17.8 km Desired = 33.2 km	Proposed NEW		100.0 100.0	dbu	Undesired = 2.1 Undesired = 1.4		
WKMY 92287	WINCHENDON MA	BLED LIC	216 A 20060302ACZ 91.1	0.06 190	N	42-42-09 072-02-18	N	345.5	45.85 12.07	33.8 Close
WKMY Proposed	60.0	dBu	Desired = 12.5 km Desired = 33.2 km	Proposed WKMY		100.0 100.0	dbu	Undesired = 2.1 Undesired = .5		
WBVC 91189	POMFRET CT	BLED LIC	216 A 20010223AAC 91.1	0.1 162	N	41-53-27 071-57-24	N	186.1	46.05 12.11	33.9 Close
WBVC Proposed	60.0	dBu	Desired = 13.1 km Desired = 33.2 km	Proposed WBVC		100.0 100.0	dbu	Undesired = 2.1 Undesired = .7		

⁶ Sufficient contour clearance - detailed study not warranted.

⁷ No contour overlap - see Figure 4.

Figure 4

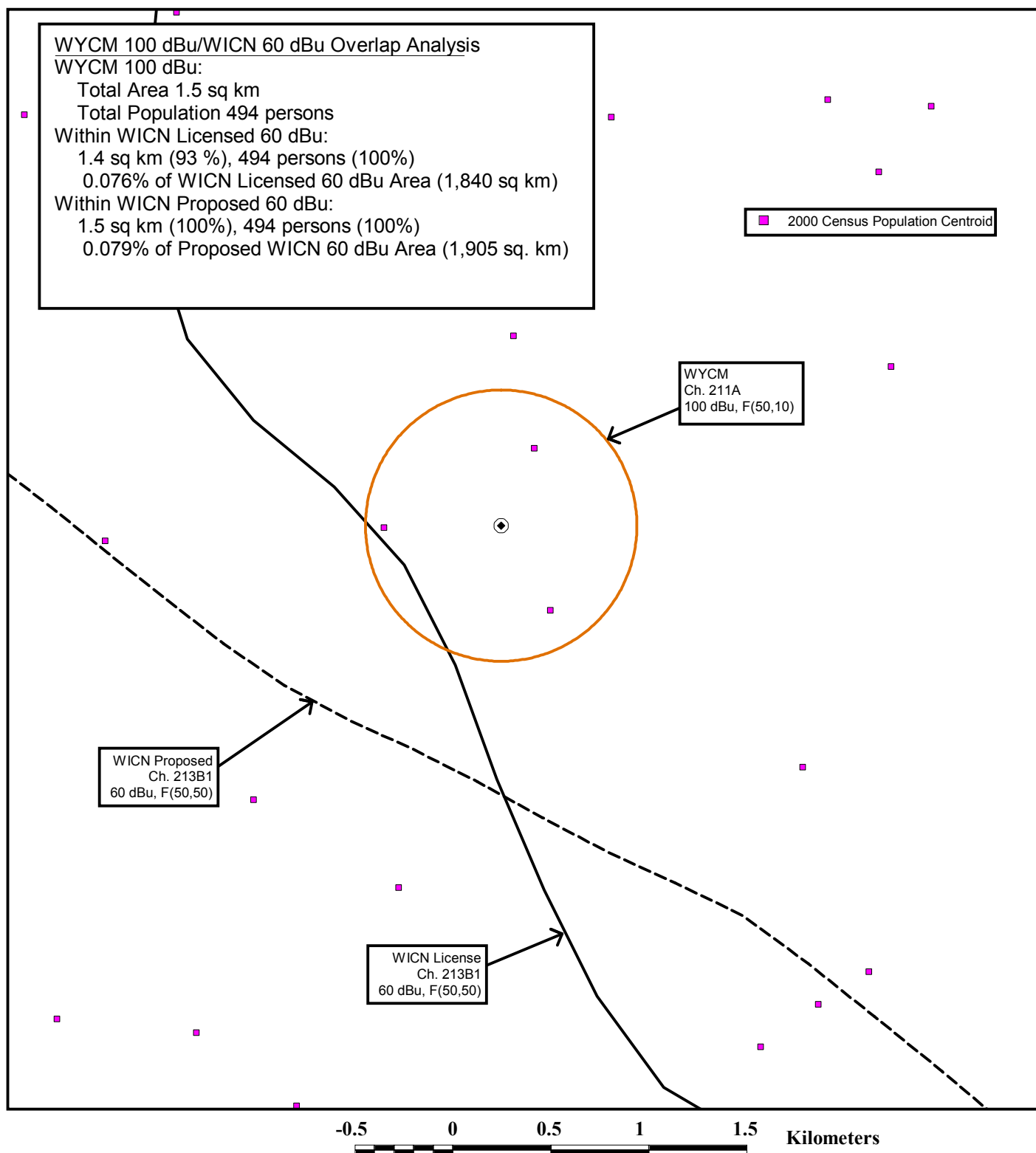


SECTION 73.509 COMPLIANCE

FM STATION WICN
WORCESTER, MASSACHUSETTS
CH 213B1 1.1 KW (MAX-DA) 247 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 5

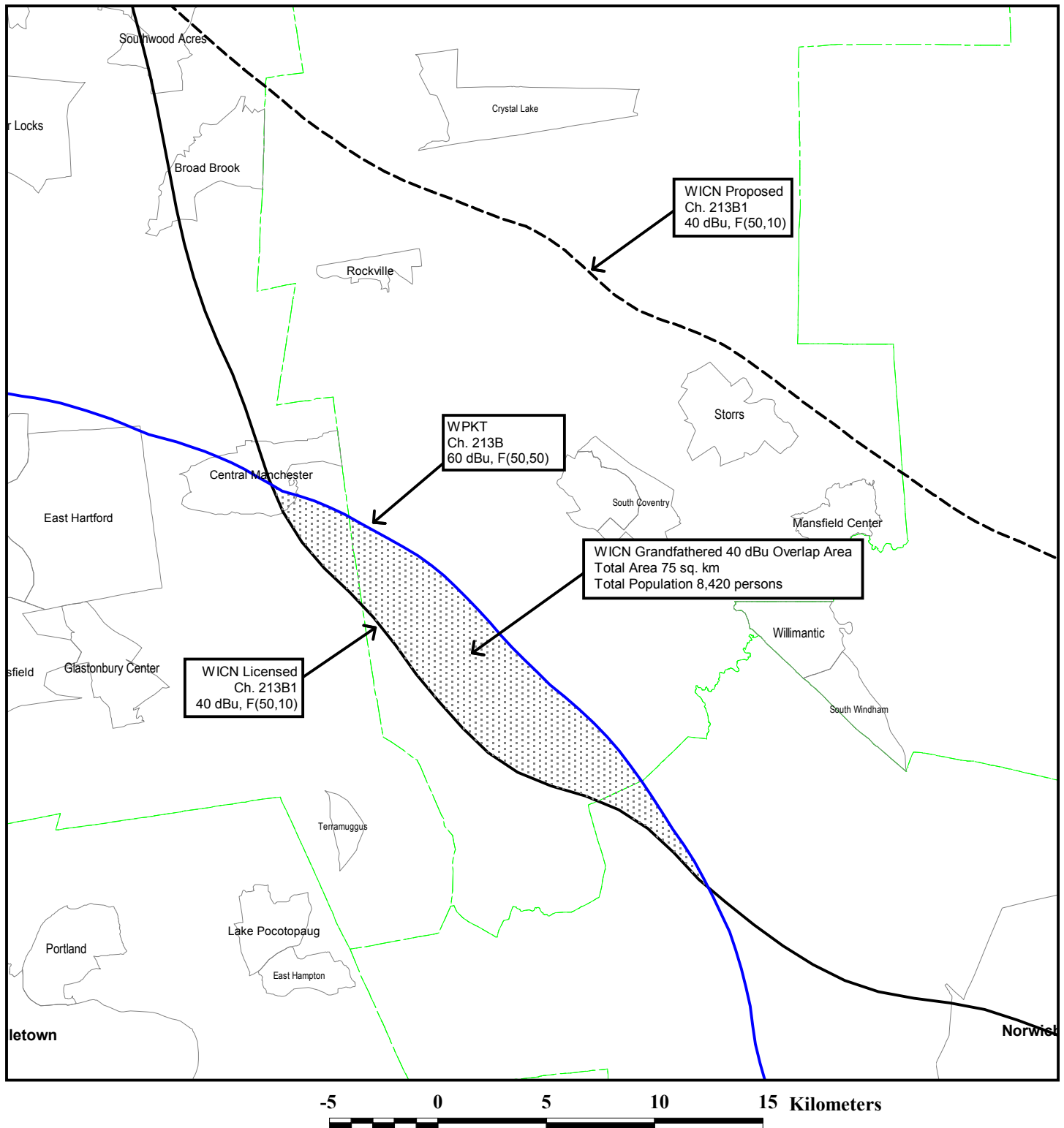


SECTION 73.509 WAIVER

FM STATION WICN
 WORCESTER, MASSACHUSETTS
 CH 213B1 1.1 KW (MAX-DA) 247 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 6

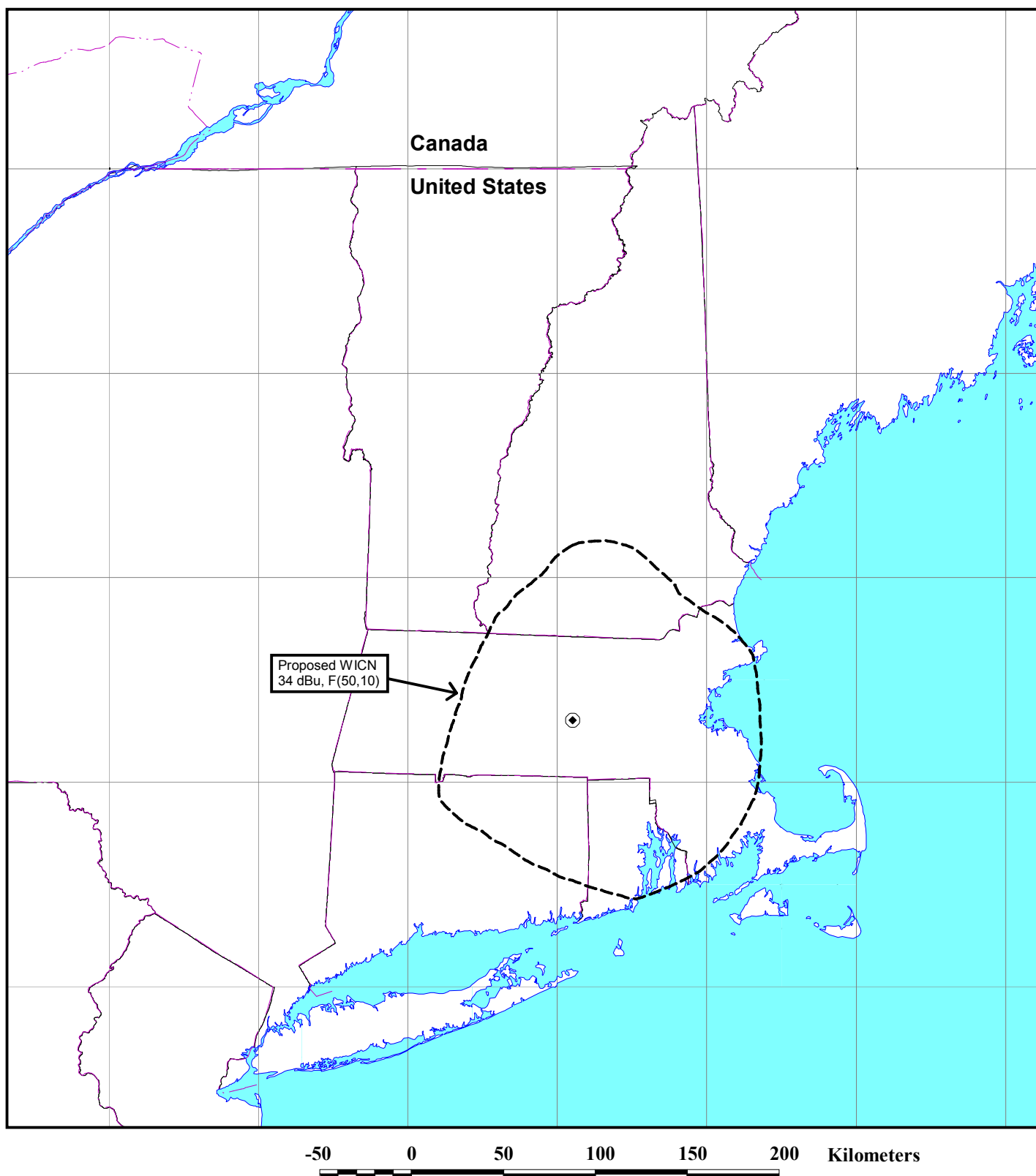


SECTION 73.509 WAIVER

FM STATION WICN
WORCESTER, MASSACHUSETTS
CH 213B1 1.1 KW (MAX-DA) 247 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 7



CANADIAN ALLOCATION STUDY

FM STATION WICN
WORCESTER, MASSACHUSETTS
CH 213B1 1.1 KW (MAX-DA) 247 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

ELECTRONICS RESEARCH, INC.
108 MARKET STREET
NEWBURGH, IN. 47630

FIGURE H4

-----THEORETICAL-----
VERTICAL PLANE RELATIVE FIELD

4 ERI TYPE SHP, SHPX, LP, OR LPX ELEMENTS
0 DEGREE(S) BEAM TILT
0 PERCENT FIRST NULL FILL

MAY 24, 1993
ELEMENT SPACING:
0.5 WAVELENGTH

POWER GAIN IS 1.307 IN THE HORIZONTAL PLANE(1.307 IN THE MAX.)

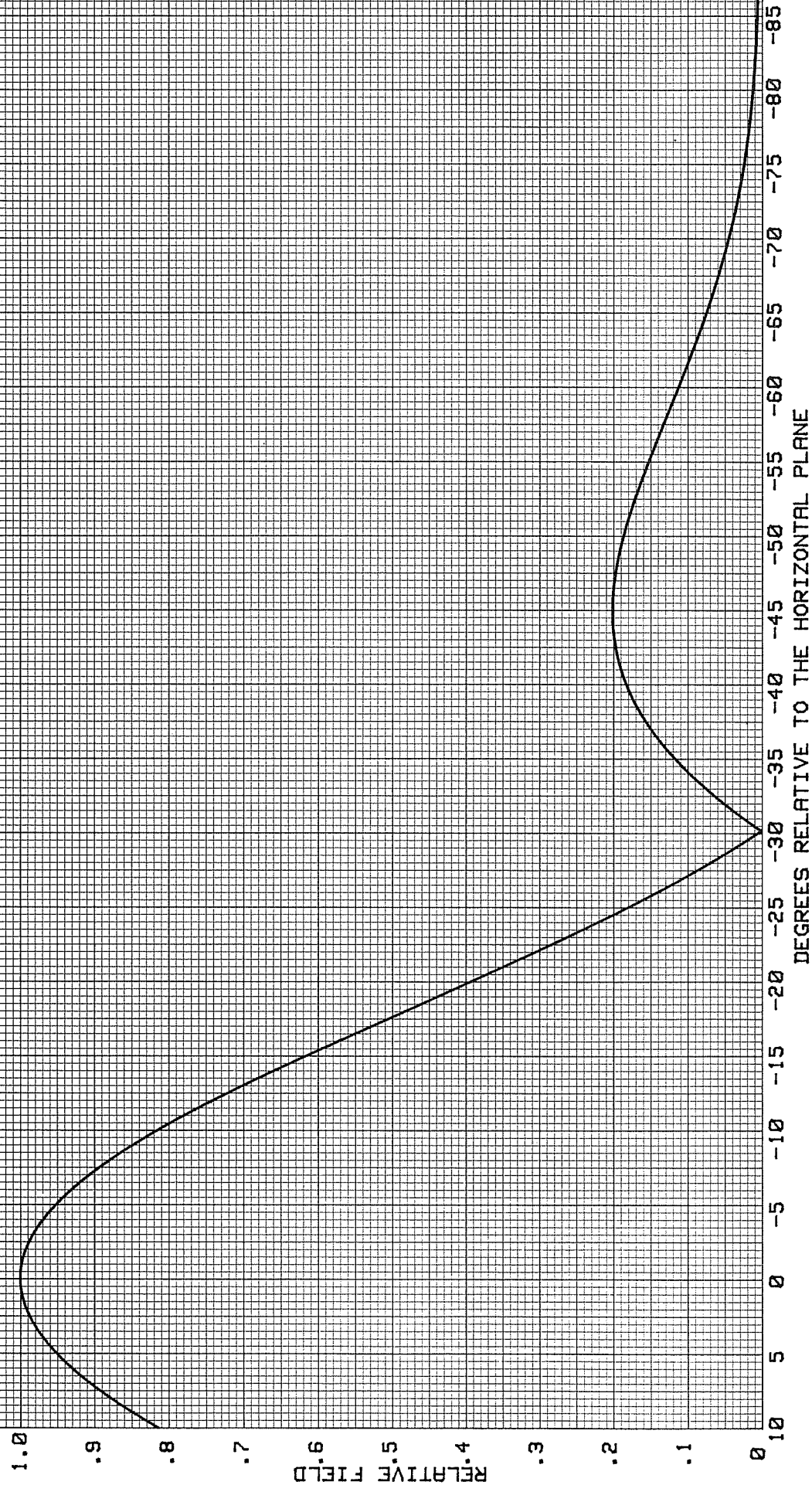


Figure 8