

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

)	
In the Matter of)	
Revitalization of the AM Radio Service)	
Second Further Notice of Proposed Rule)	MB Docket No. 13-249
Making)	

To: The Commission

COMMENTS OF COMMUNICATIONS TECHNOLOGIES, INC.

Communications Technologies, Inc. (CTI), pursuant to the FCC Rule Section 1.401, submits its Comments to the above captioned Second Further Notice of Proposed Rule Making (SFNPRM) wherein the FCC seeks to investigate possible changes to its rules which would allow AM broadcasters to better serve the public.

Introduction

CTI is a broadcast engineering consulting firm located in Marlton, New Jersey. The firm was established in 1985 and has clients who are both commercial and non-commercial licensees of AM, FM and TV stations throughout the United States. The Radio Frequency (RF) portions of Rule Making and applications filed by clients with the FCC are regularly completed by CTI. Throughout its history the firm has been active in AM Broadcast Engineering including assisting clients in the filing of Comments and Reply Comments in this proceeding and in MM Docket No. 87-267, the Commission's last comprehensive review of the regulatory areas which affected the AM Service.

Before addressing the specifics of the SFNPRM it is believed important to look back at how a number of AM stations came into existence between 1975 and 2008 when economic conditions slowed new station development. Measured soil conductivity, obtained from both existing stations and temporary test transmitter sites, was often used in the FCC application process to put stations on the air which could not have been otherwise possible. The reason for this is the fact measured soil conductivity is significantly lower in many areas of the country than the FCC M3 Map value and the lower conductivities result in lesser distance to contours. The other factor that does not seem to be noted in the SFNPRM is that in many areas

of the country a seasonal variation in conductivity occurs resulting in increased field strength in winter, reduced field strength in summer compared to average values in spring and fall. Similarly, the sunspot cycle, described as 11 years in length but ranging from 7 to 14 years in practice, significantly affects nighttime and critical hours propagation in the AM Broadcast Band. It is believed that broadcasters, and the Commission, should consider these real-world conditions when evaluating possible rule changes and their benefit.

CTI believes that several of the proposals found in the current (SFNPRM) hold significant potential benefit for AM stations as they could lead to stronger day and night signals which are needed to overcome the interference levels that continue to increase with each passing year. CTI offers its comments regarding items in the NPRM in the following paragraphs and then addresses other aspects of the AM Broadcast Service which are believed important to consider. Paragraph numbers referenced in the following Comments are those found in the Public Notice Released October 5, 2018.

Paragraph 12. Changes to Class A Station Protections

We support the proposal to modify 73.37 that Class A stations be protected to their 0.5 mV/m daytime groundwave contour by co-channel stations and their 2 mV/m contour by first adjacent channel stations. The reason for this is the belief that, given today's environment, service beyond the 0.5 mV/m contour is not reliable, even in rural areas, and in many areas service beyond the 2 mV/m contour is not consistent nor reliable. Protecting Class A stations co-channel to the 0.5 mV/m contour is believed consistent with the potential for Class A stations to serve some quiet rural areas due to historic protection levels. However, it is our view that, given current receiver selectivity characteristics, protecting Class A 1st adjacent channel groundwave beyond the 2 mV/m contour is unnecessary. Further, for many decades the protected co-channel Class A 0.1 mV/m contour has been subjected to the 0.5 mV/m contour from first adjacent channel stations, per 73.182(a) prior to 1991, with an interference to service ratio of 5:1. Here we are recommending that the protected co-channel Class A 0.5 mV/m contour be subjected to the 2 mV/m contour from first adjacent channel stations, and an interference to service ratio of 4:1. Given noise levels in the AM Band today, and the fact that protecting a stronger contour opens the door for greater power to overcome the noise level, adoption of these allocation standards for Class A daytime operation would appear to provide an optimum level of protection for Class A daytime service. Further, this would allow Class B, C and D stations the opportunity to improve service and gain coverage area free from interference while making the second and third adjacent channel protected contour values and interference values consistent for all classes of stations.

Revise paragraph (a) of Section 73.37 to read as follows:

§ 73.37 Applications for broadcast facilities, showing required.

(a) * * *

Frequency Separation (kHz)	Contour of proposed station (classes B, C and D) (mV/m)	Contour of any other station (mV/m)
0	0.025 0.100 2.0	0.500 (Class A) 2.0 (Other classes) 0.100 (Other classes)
10	2.0 2.0	2.0 (Class A) 2.0 (Other classes)
20	25.0	25.0 (All classes)

Critical Hours Proposal, Alternative 2 of the SFNPRM should be adopted. Continuing to protect the significant daytime service area of Class A stations from co-channel interference out to the 0.5 mV/m groundwave contour during critical hours is believed necessary to maintain daytime service to rural areas. It is proposed that the calculations be done on a site-to-site basis to simplify the calculation process. It is proposed that the calculations be done on a site-to-site basis to simplify the calculation process.

Nighttime Hours Proposal, Alternative 2 of the SFNPRM should be adopted. We support this proposal as it reflects real world RSS interference conditions rather than protection to the 0.5 mV/m groundwave contour which, in many cases, is subject to interference. It is proposed that the calculations be done on a site-to-site basis to simplify the calculation process. Since we will be proposing that 1st adjacent skywave interference from to Class B stations no longer be considered we also propose that 1st adjacent skywave interference to Class A stations also be deleted from the rules.

Paragraph 15 & 16. RSS Nighttime Calculation Methodology & Change in Daytime Protection to Class B, C and D Stations

As stated in the SFNPRM, “The AMR FNPRM included a tentative conclusion to roll back 1991 rule changes pertaining to calculation of nighttime RSS values of interfering field strengths and nighttime interference-free service. The item also proposed a return to predicting the nighttime interference-free coverage area using only the interference contributions from co-channel stations and the 50 percent exclusion method. The Commission found that the interference reduction the 1991 rule changes achieved was small compared to the resulting impediment the rules placed on AM stations’ ability to make signal

improvements.” Emphasis added.

CTI, and many of its clients, please see Appendix 2 attached, agree with the Commission’s tentative conclusion that the change in nighttime protection requirements implemented in MM Docket no. 87-267 have severely limited station coverage at night and portions of the 73.182 rules in place prior to MM Docket No. 87-267 should be restored. This would result in co-channel interference calculations based on other co-channel stations only and interference calculated using the 50% RSS basis.

CTI, and many of its clients, please see Appendix 2 attached, also agree with the Commission’s tentative conclusion “...revision to daytime protection to Class B, C, and D AM stations, to return to the pre-1991 0 dB daytime 1:1 protection ratio for first adjacent channels; change second adjacent channel groundwave protection to match the current levels for third adjacent channel protection; and eliminate third adjacent channel groundwave protection. Additionally, the AMR FNPRM included a proposal to change the daytime protected contour for Class B, C, and D stations to the 2.0 mV/m contour. These proposals were intended to allow AM broadcasters greater flexibility to make station modifications designed to increase signal strength to their primary service areas.” Emphasis added.

Changing the first adjacent channel protected groundwave contour to 2.0 mV/m and the 2nd adjacent channel protected ground wave contour to 25 mV/m, on a 1:1 ratio of interference to service, would raise the protected contour to a level strong enough that interference would be much less likely to occur, and quality of service would be enhanced. Changing the Class B, C and D co channel protected contour to 2.0 mV/m and a 20:1 ratio of service to interference would again raise the protected contour to a level strong enough that interference would be much less likely to occur, and quality of service would be enhanced.

We hope that other commenters, in their Reply Comments, support timely adoption of the changes addressed in paragraphs 15 and 16 as these allocation changes have more potential to allow AM stations to improve their signal, and/or reduce the complexity of their AM directional antenna systems, than any other changes being proposed by the Commission.

Daytime and Night Proposed Allocation Changes as Found in 73.182(o)

The above changes can be summarized by reference to Rule Section 73.182(o) which should look like this:

FCC Rule Section 73.182(o)

Class of station	Class of channel used	Signal strength contour of area protected from objectional interference (uV/m)		Permissible interfering signal (uV/m)	
		Day - GW	Night - GW	Day - GW	Night
A	Clear	SC 500 AC 2000	SC 500 AC 2000	SC 25 AC 2000	SC 25 SW Not presc.
B	Regional	2000	2500 or NIF if >	SC 100 AC 2000	20:1 10% SW Not presc.
C	Local	2000	Not presc.	SC 100	Not presc.
D	Regional	2000	Not presc.	SC 100 AC 2000	Not presc. Not presc.

APPENDIX 1. Practical Examples of AM Broadcast Station Daytime Signal Levels

The attached Appendix is a sampling of Class A, B and C stations located within a 140 kilometer radius of our suburban Philadelphia office location in New Jersey. This information is believed helpful as it supports many of the assumptions found in this proceeding. First, the calculated distance to ground wave contours based on FCC M3 map conductivity is typically less than the measured field strength. In summer months the measured signal levels can drop to 50% of the winter measured values. Generally, measured AM field strength values of less than 2 mV/m are associated with significant noise and interference and the noise and interference levels become even greater in summer months.

APPENDIX 2. Practical Examples of How the Proposed Rule Changes Can Be A Major Benefit to Both Day and Night Broadcast Station Operation.

We have selected six different radio station scenarios to analyze under the proposed new rules. A map Figure for each is attached:

Appendix 2 - 1. WSHU(AM), 1260 kHz Westport, CT. Improved Day coverage for this Class D station.

Appendix 2 - 2. WRNJ(AM), 1510 kHz, Hackettstown, NJ. Improved Day coverage for this Class B station.

Appendix 2 - 3. WRNJ(AM), 1510 kHz, Hackettstown, NJ. Improved Night coverage for this Class B station on a Class A Clear Channel.

Appendix 2 - 4. WVZN(AM), 1580 kHz, Columbia, PA. Improved Day coverage for this Class D station on a Canadian Class A Channel.

Appendix 2 - 5. WWRV(AM), 1330 kHz, New York, NY. Improved Night coverage for this Class B station

through deletion of the 25% RSS method.


Appendix 2 - 6. KXEN(AM), 1010 kHz, St. Louis, MO. Improved Day coverage for this Class B station on a Canadian Class A Channel.

Conclusion

We thank the Commission for continuing a proceeding that has, and continues to have, the potential to help many AM broadcasters to more effectively serve the public. We note that support for timely adoption of the changes addressed by the Commission in paragraphs 15 and 16 of the SFNPRM have more potential to allow AM stations to improve their signal, and/or reduce the complexity of their AM directional antenna systems, than any other changes being proposed by the Commission.

Respectfully submitted,

Communications Technologies, Inc.



By: _____
Clarence M. Beverage



Laura M. Mizrahi

February 8, 2019

APPENDIX 1

AM STATIONS INCLUDED IN LISTENING AND SIGNAL LEVEL ANALYSIS AND LOCATED WITHIN 140 KILOMETERS OF

PHILADELPHIA SUBURBAN

REFERENCE COORDINATES N 39-54-27 W 74-50-04

COMMENTS IN MB DOCKET No. 13-249

FEBRUARY 6, 2019

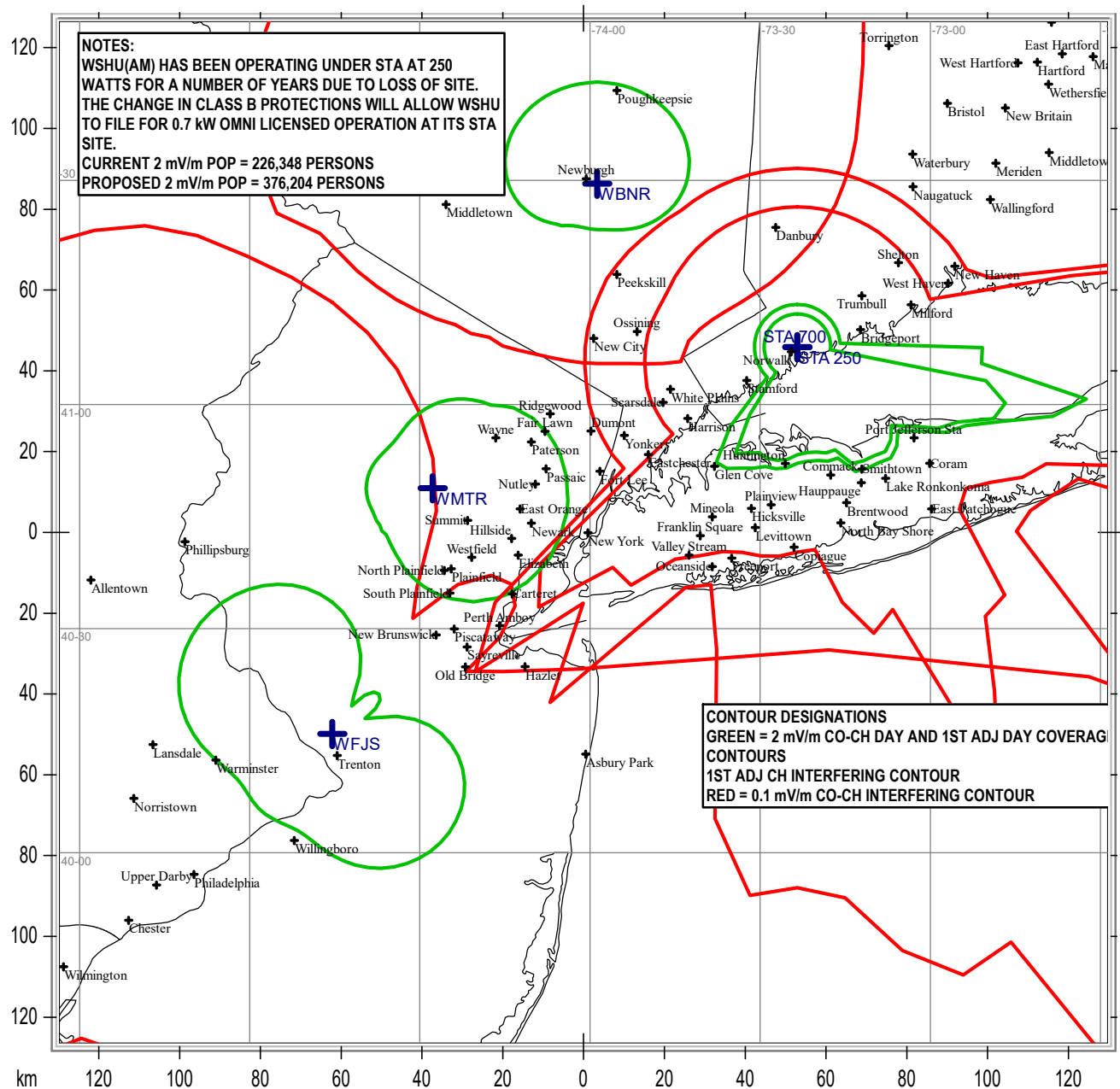
<u>Call</u>	<u>Class</u>	<u>Day</u>	<u>Power</u>	<u>Frequency</u>	<u>Distance From</u>		<u>mV/m</u>		<u>Comments</u>
					<u>Ref. Kilometers</u>	<u>Computed</u>	<u>Computed</u>	<u>Measured</u>	
WTTM	B		10 kW	1680	14.5	7		-	Signal not impacted by noise
WPHT	A	50		1210	15.3	38		33	"
WEMG	C	1		1310	24.6	1.3		0.7	Aggressive processing and music
WNWR	B	50		1540	37.6	5		0.4	Signal fading and noise
KYW	A	50		1060	41.5	7		4.8	Signal not impacted by noise
WNTP	B	50		990	43.2	11.5		4.5	"
WFIL	B	5		560	43.2	11.0		10.1	"
WOR	A	50		710	117.3	1.6		2.4	"
WABC	A	50		770	126.1	0.9		0.6	Noise and background whistle
WCBS	A	50		880	138.2	0.9		0.55	Noise on signal
WFAN	A	50		660	138.2	1.5		1.2	Noise on signal

Notes: Field strength measured with PI FIM-21 serial no. 722 between 3:45 PM and 4:15 PM.

Weather 60 degrees and clear on February 4, 2019.

Soil temperature 32 degrees F at a depth of 5 cm

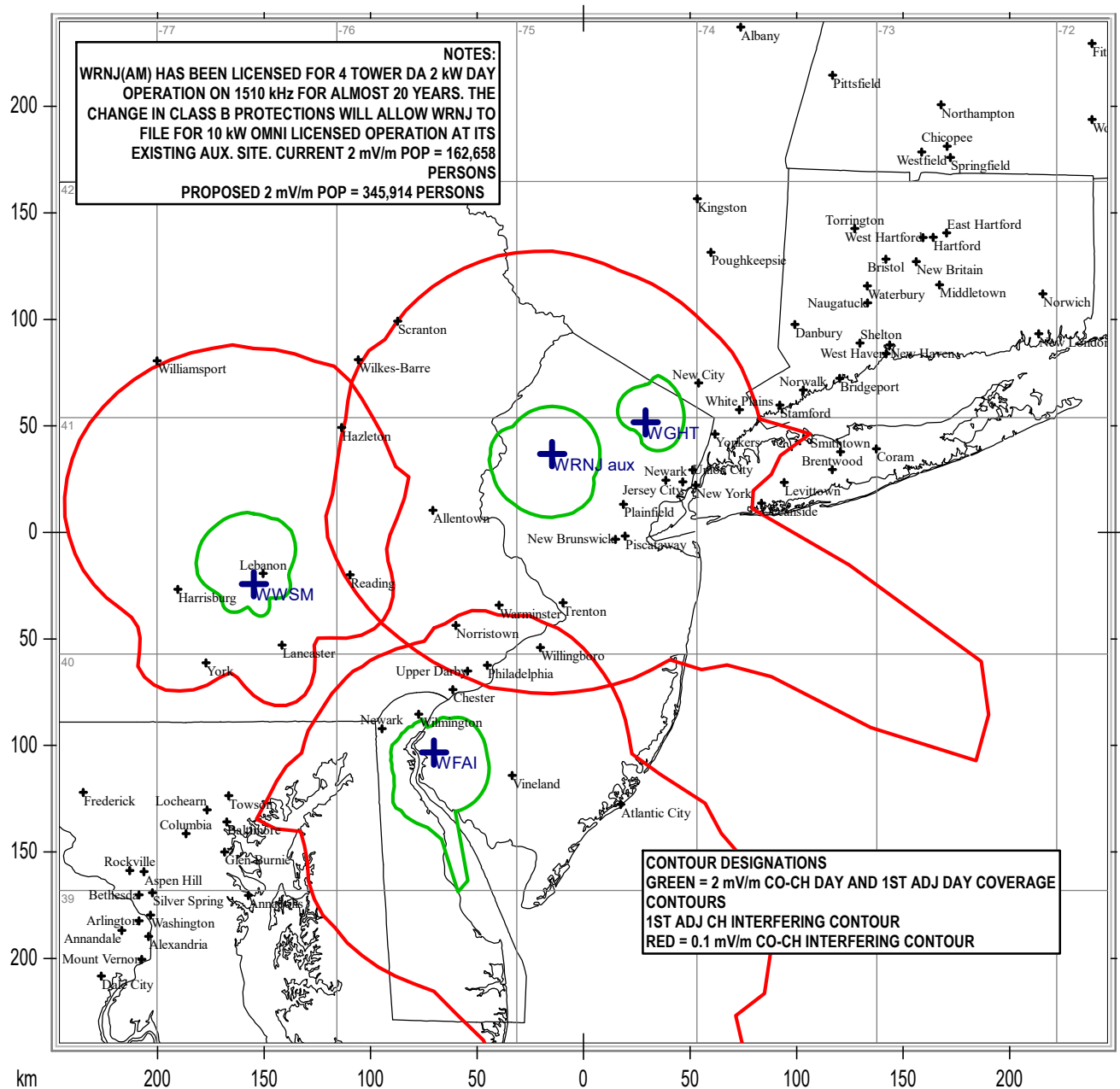
WSHU(AM) 1260 kHz WESTPORT, CONNECTICUT 2 mV/m CO & 1ST ADJ CH PROTECTED CONTOURS



Communications Technologies, Inc. Marlton, New Jersey

State Borders Lat/Lon Grid

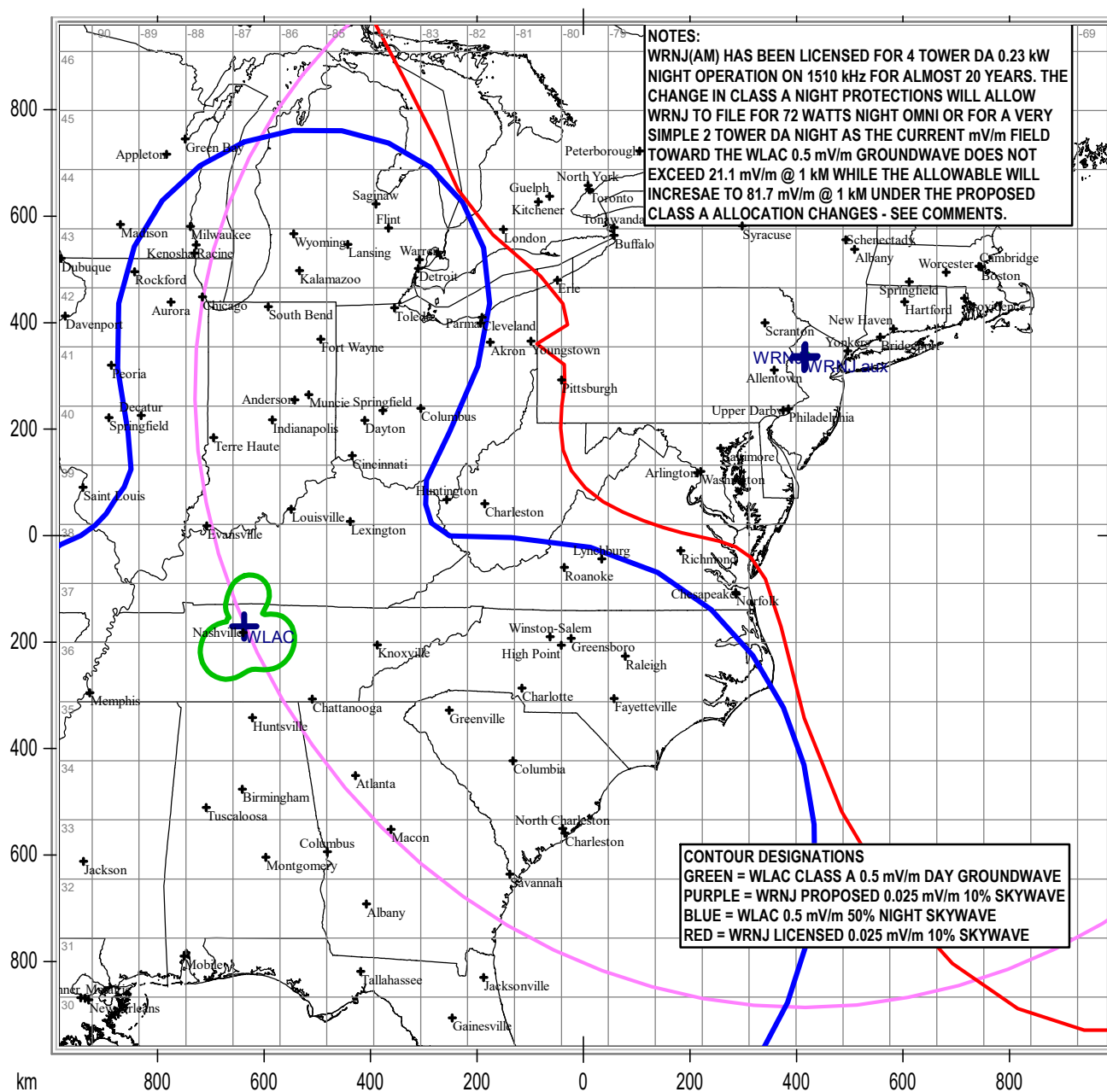
WRNJ(AM) 1510 kHz HACKETTSTOWN, NJ 2 mV/m CO & 1ST ADJ CH PROTECTED CONTOURS



Communications Technologies, Inc. Marlton, New Jersey

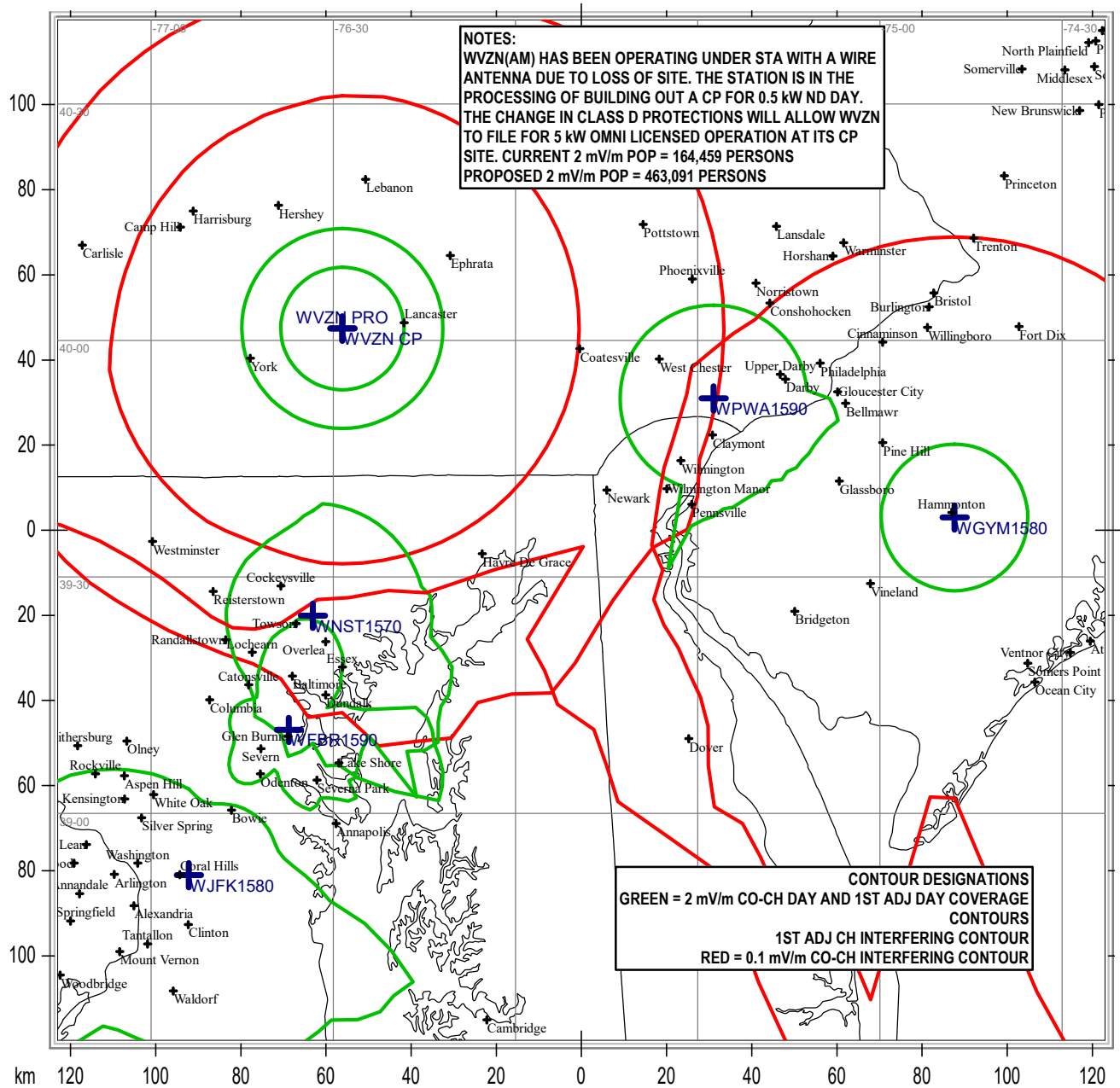
State Borders Lat/Lon Grid

WRNJ(AM) 1510 KHZ HACKETTSTOWN, NJ LIC. & ND 10% SKYWAVE WITH WLAC LIC. GROUNDWAVE & SKYWAVE



Communications Technologies, Inc. Marlton, New Jersey

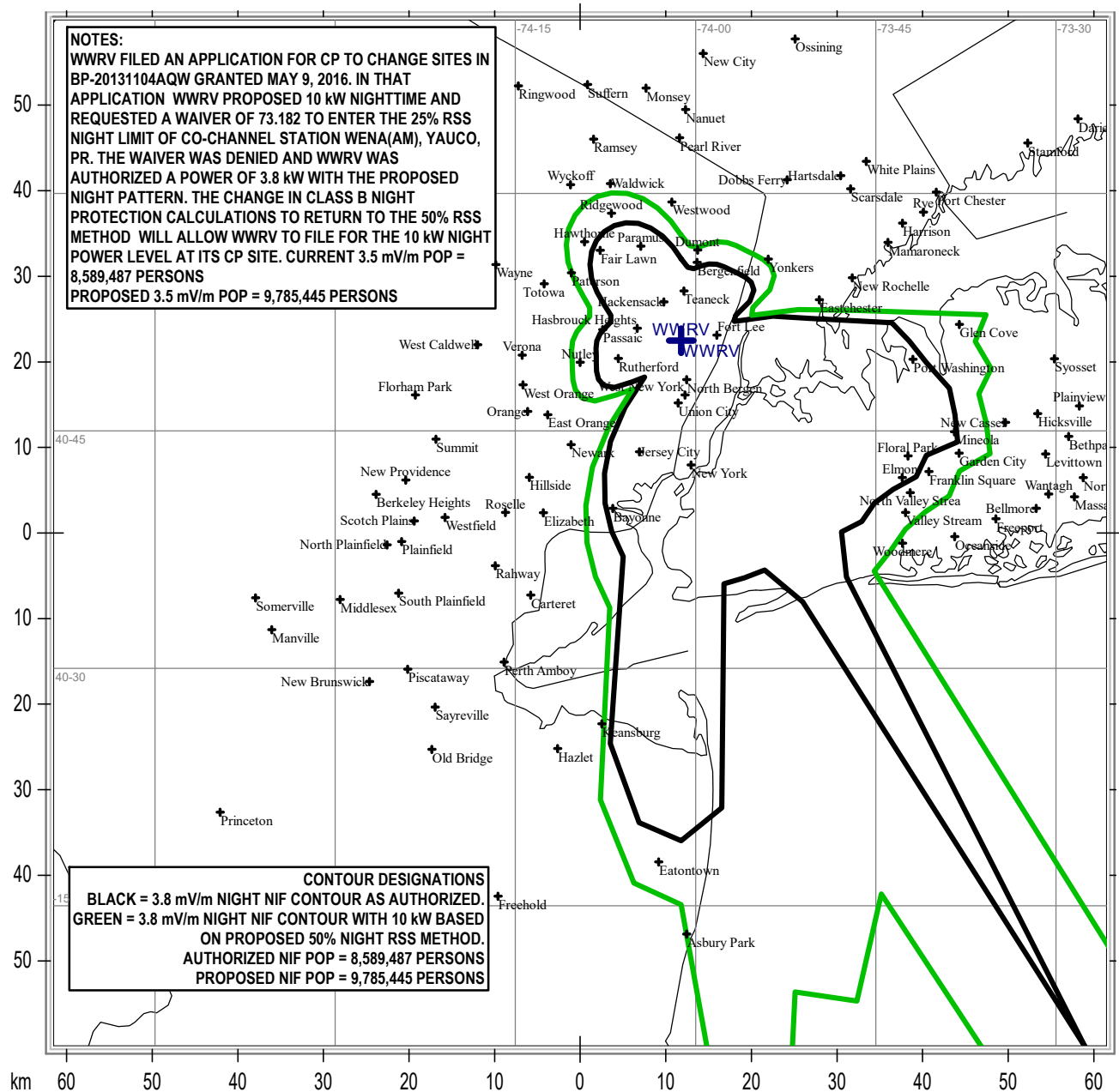
WVZN(AM) 1580 KHZ COLUMBIA, PA 2 mV/m CO & 1ST ADJ CH PROTECTED CONTOURS



Communications Technologies, Inc. Marlton, New Jersey

State Borders Lat/Lon Grid

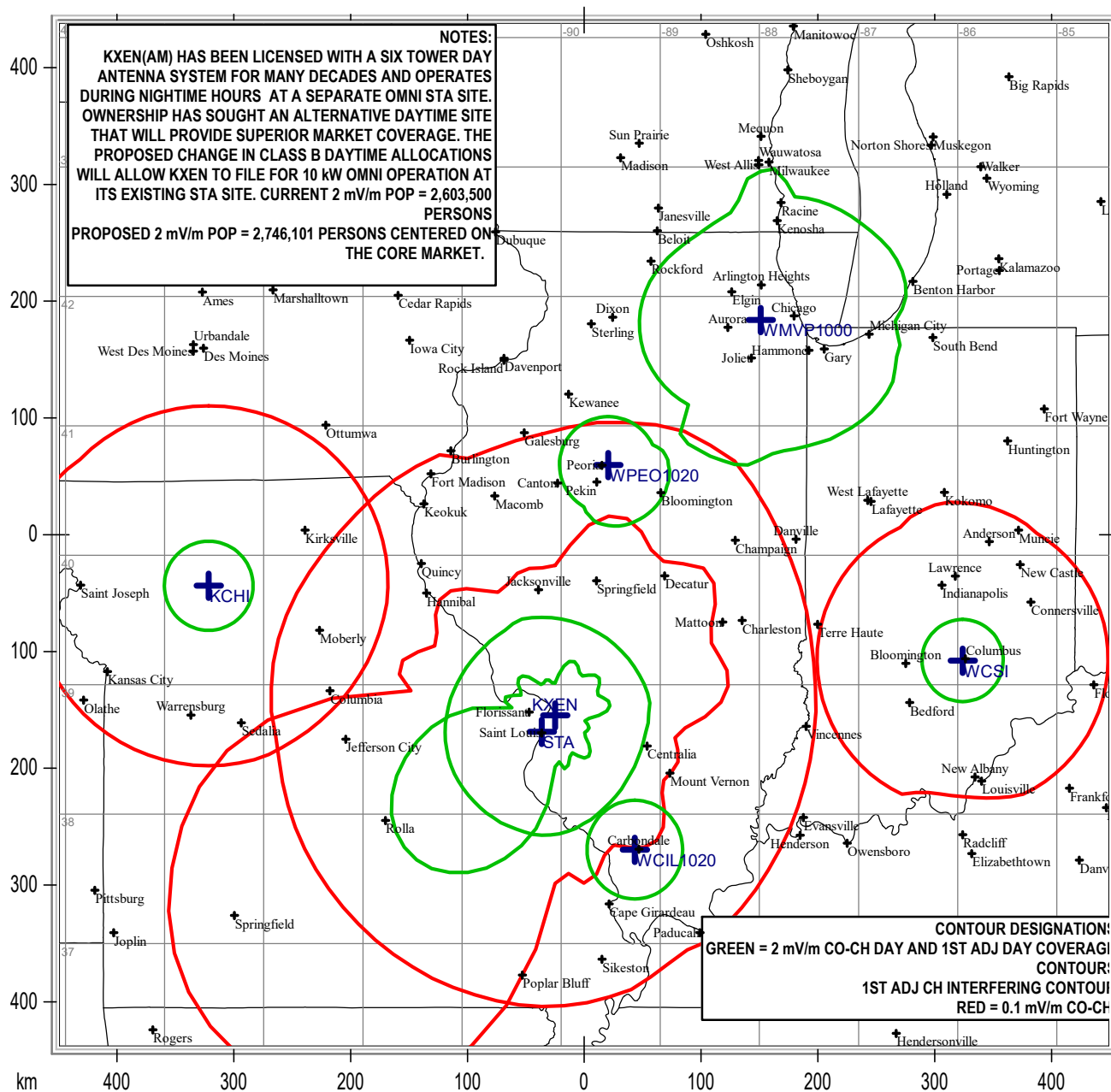
WWRV(AM) 1330 kHz NEW YORK, NY AS AUTHORIZED AND UNDER PROPOSED 50% RSS



Communications Technologies, Inc. Marlton, New Jersey

State Borders Lat/Lon Grid

KXEN(AM) 1010 kHz ST. LOUIS, MO AS AUTHORIZED AND UNDER PROPOSED NEW DAY ALLOCATION RULES



Communications Technologies, Inc. Marlton, New Jersey

State Borders Lat/Lon Grid