

ENGINEERING REPORT COVERING  
REQUEST FOR CONSTRUCTION PERMIT  
ON BEHALF OF MARSHFIELD BROADCASTING CO., INC.  
FOR WMEX 1510 KILOHERTZ  
QUINCY, MASSACHUSETTS

JUNE 2018

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SUMMARY

The engineering exhibit of which this statement is part was prepared on behalf of Marshfield Broadcasting Co., Inc., hereinafter referred to as "Marshfield", in support of an application for construction permit for AM station WMEX Boston, Massachusetts. Marshfield is the licensee of WMEX. WMEX is licensed to operate as a Class B station on a frequency of 1510 kilohertz on an unlimited basis using a tri-mode directional antenna system with power of 50 kilowatts. The purpose of this application is to request to change transmitter site and change city of license to Quincy, Massachusetts. Technical details supporting the city of license change are provided in an engineering appendix submitted with this report. Fulltime non-directional operation is requested with power of 10 kilowatts day, 2 kilowatts critical hours and 0.1 kilowatt at night. The proposed operation will diplex with WBIX Boston, Massachusetts.

### DAYTIME ALLOCATION CONSIDERATIONS

The geographic area encompassed by the daytime allocation study is vast and as a consequence, a conventional allocation map would be hard to read. Accordingly, several maps that provide greater allocation detail in pertinent areas are provided in lieu of a single conventional map.

Figure 1 is a co-channel allocation map. The first adjacent channel mapping is provided on Figure 2. Second adjacent channel mapping can be found on Figure 3 and third adjacent channel mapping is plotted on Figure 4.

### CRITICAL HOURS ALLOCATION CONSIDERATIONS

The results of a critical hours allocation study revealed Class A station WLAC Nashville, Tennessee required detailed study. Figure 5 is a map showing the WLAC 0.1 mV/m contour and the location of points used in the allocation study. Table 1 provides the study point data and shows the proposed WMEX critical hours operation will protect the WLAC 0.1 mV/m contour. The proposed WMEX critical hours operation will not cause prohibited contour overlap with any legally qualifying North American AM radio station during the critical hours.

### NIGHTTIME ALLOCATION CONSIDERATIONS

Figure 6 is a Class A nighttime allocation map showing the licensed WMEX 50 kilowatt directional antenna and proposed WMEX 0.1 kilowatt non-directional antenna nighttime 0.025 mv/m 10% skywave contours and the 0.5 mv/m 50% skywave contour of

co-channel station Class A WLAC Nashville, Tennessee. The licensed WMEX 0.025 mV/m skywave contour overlaps the WLAC 0.5 mV/m skywave contour over United States land area. Although the proposed WMEX 0.025 mV/m contour also overlaps WLAC over United States land area, there is a net reduction in area and population as compared to the licensed operation. The existing population in the overlap area is 46,452,513 and the proposed population in the overlap area is 32,787,821, which is a reduction of 13,664,692 people. The area reduction, which includes the entire Chicago metropolitan area, is substantial and can be readily seen on Figure 6.

#### TECHNICAL DATA AND EXHIBITS

Figure 7 is a map of the 5 mV/m city of license service contour for the proposed WMEX daytime and critical hours operation. The WMEX proposal is compliant with FCC requirements as 100% of Quincy, Massachusetts will receive city grade service during the daytime and critical hours.

Figure 8 is a map that plots the proposed WMEX daytime 1000 mV/m contour. The population count is 1,711 persons within the 1000 mV/m contour. The population within the proposed WMEX 25 mV/m contour is 406,021. The 1000 mV/m population is 0.42% of the 25 mV/m population. Therefore, the proposed WMEX operation is compliant with Section 73.24(g) of the rules, as the population of the 1000 mV/m contour is less than 1% of the 25 mV/m population.

All distance to contour calculations used in plotting the various coverage and allocation maps were based on M-3 soil conductivity data.

## GROUND SYSTEM

The existing WBIX ground system will be used for the proposed diplex operation as presently authorized. The system includes 120 #10 AWG copper radials 59.5 meters in length, spaced at three degree intervals and buried to a depth of 4-6 inches. In addition, 120 radials with a length of 50 feet, are interspersed between the long radials. Intersecting radials are bonded to transverse copper straps.

## ANSI RADIATION GUIDELINES

A study of the proposed daytime facility was conducted with respect to standards set forth in FCC Bulletin OST Number 65, Edition 97-01, regarding human exposure to radiofrequency radiation. In addition, the contribution from co-located station WBIX was included in the study calculations. The study was based on data provided in Tables 2 and 3 of Supplement A, "Predicted Distances for Compliance with FCC Limits". Based on Tables 2 and 3, a distance of 2.25 meters from the tower would have to be observed to achieve ANSI radiofrequency compliance.

When it is necessary for workers to be within the hazard area near the tower, an appropriate power reduction or temporary cessation of broadcasting will be implemented. The access to the tower is locked. Signs, warning of an RF hazard, are conspicuously posted at the site.

DECLARATION

The foregoing was prepared by or under the immediate supervision of Charles A. Hecht of Charles A. Hecht & Associates, Inc., Freehold, New Jersey, whose qualifications are a matter of record with the Federal Communications Commission. All statements herein are true and correct of his knowledge except such statements made on information and belief, and as to those statements, he believes them to be true and correct under the penalty of perjury.

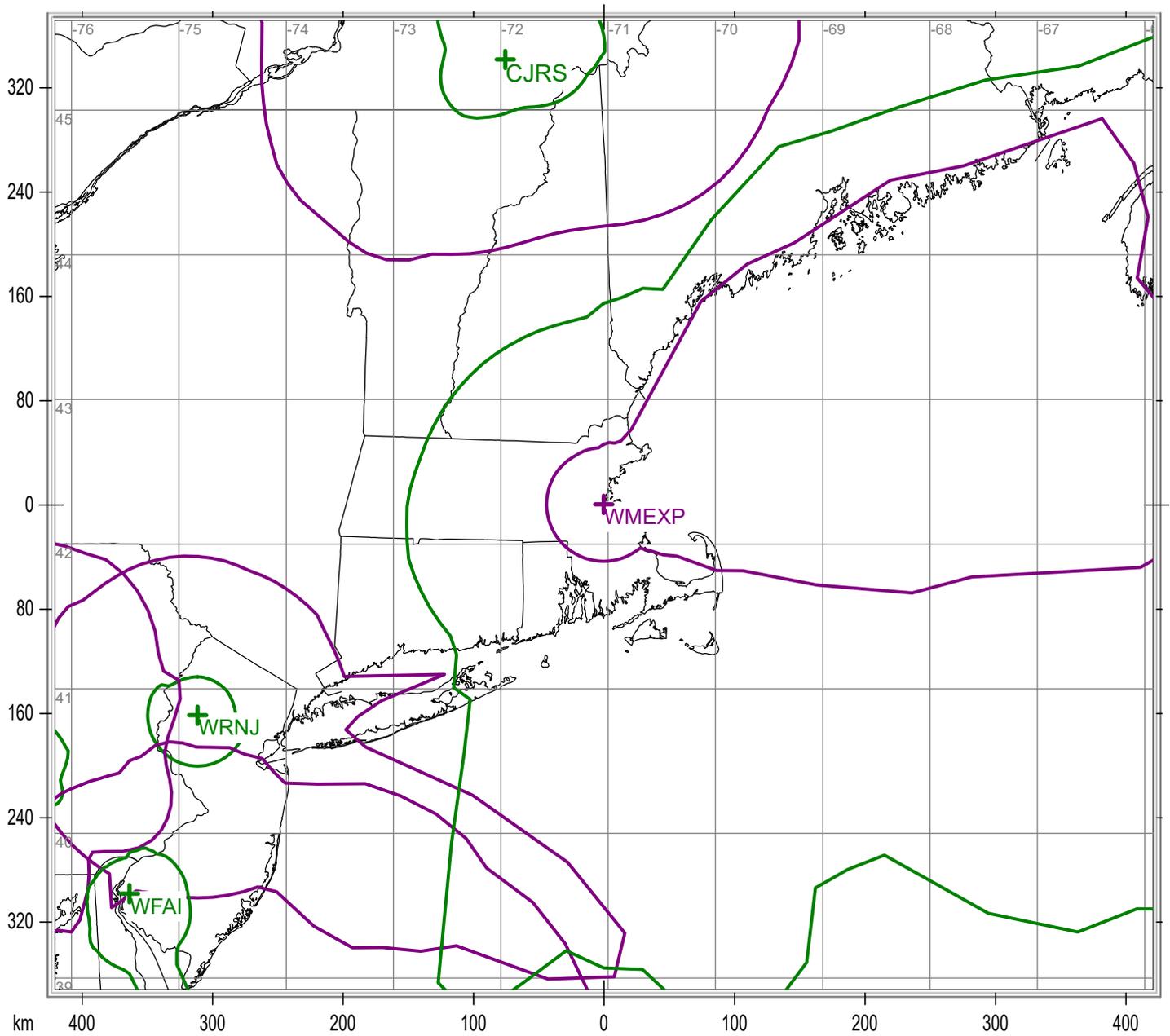
Respectfully submitted,

/s/

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June 9, 2018

# FIGURE 1 - DAY CO-CHANNEL ALLOCATION STUDY

SHOWING .5 AND .025 MV/M CONTOURS

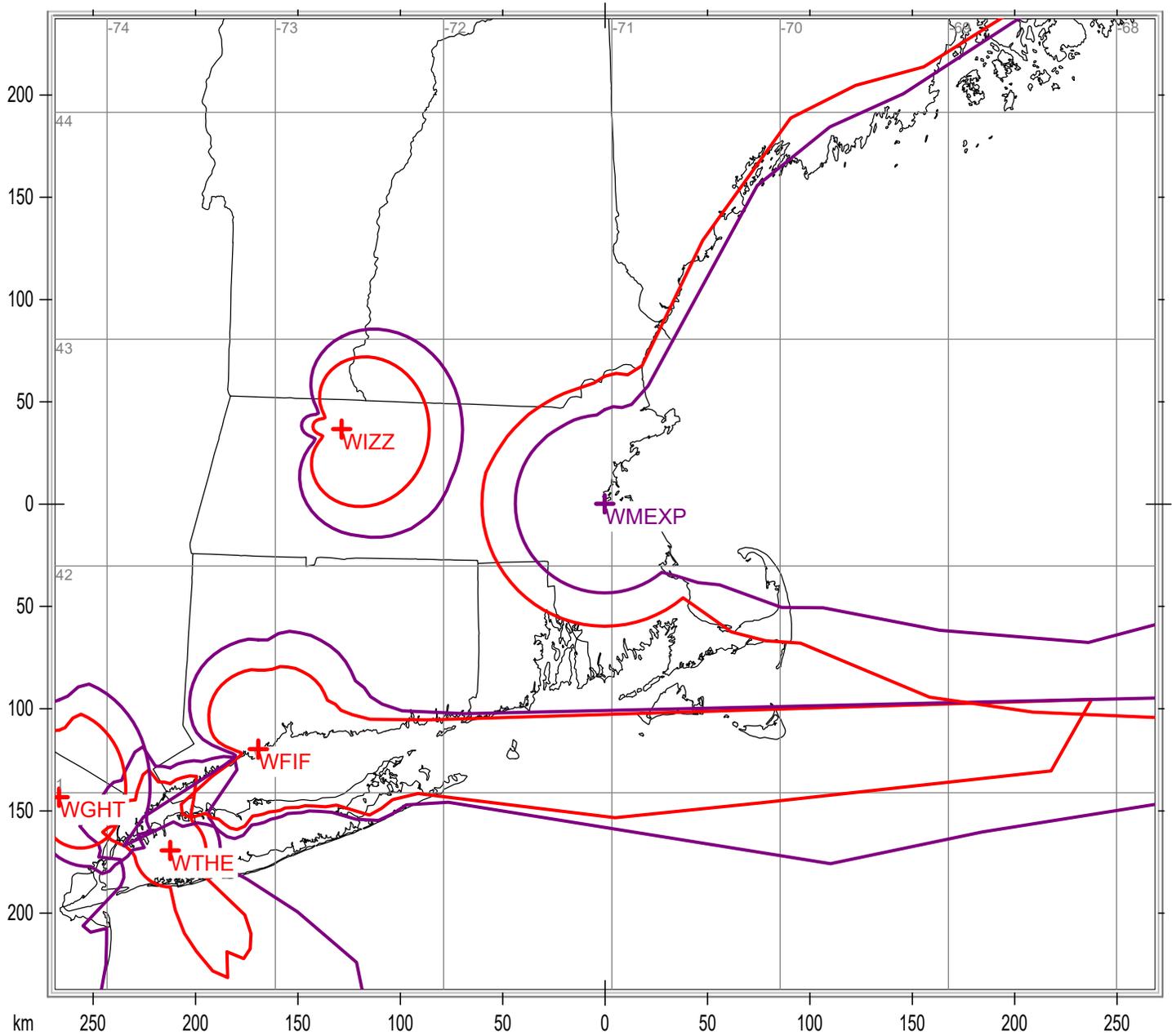


WMEX 1510 KILOHERTZ 10 KW ND QUINCY, MASSACHUSETTS

State Borders      Lat/Lon Grid

# FIGURE 2 - DAY ADJ CHANNEL ALLOCATION STUDY

SHOWING .5 AND .25 MV/M CONTOURS

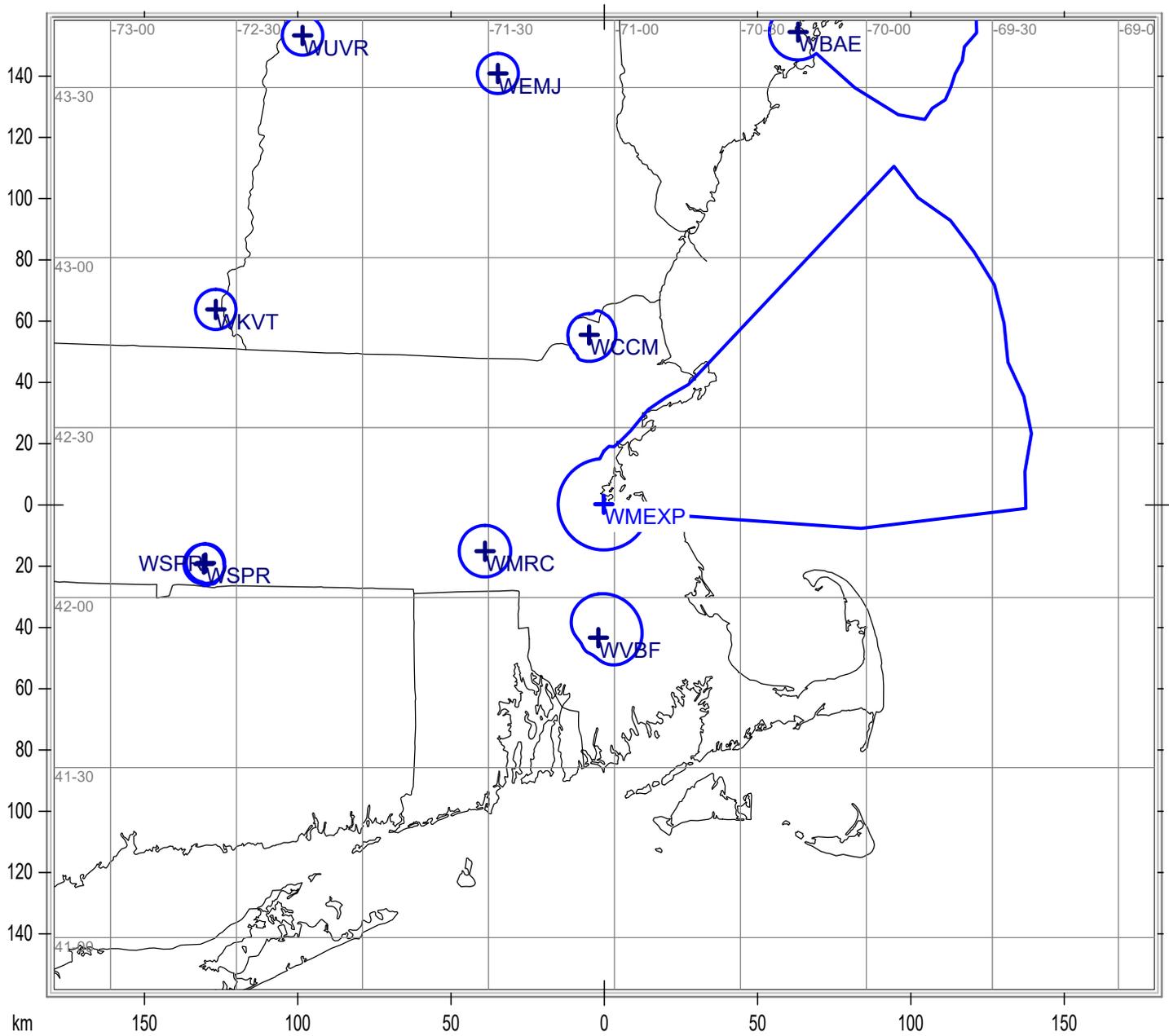


WMEX 1510 KILOHERTZ 10 KW ND QUINCY, MASSACHUSETTS

State Borders Lat/Lon Grid

# FIG 3 - DAY 2ND ADJ CHANNEL ALLOCATION STUDY

SHOWING 5 MV/M CONTOURS

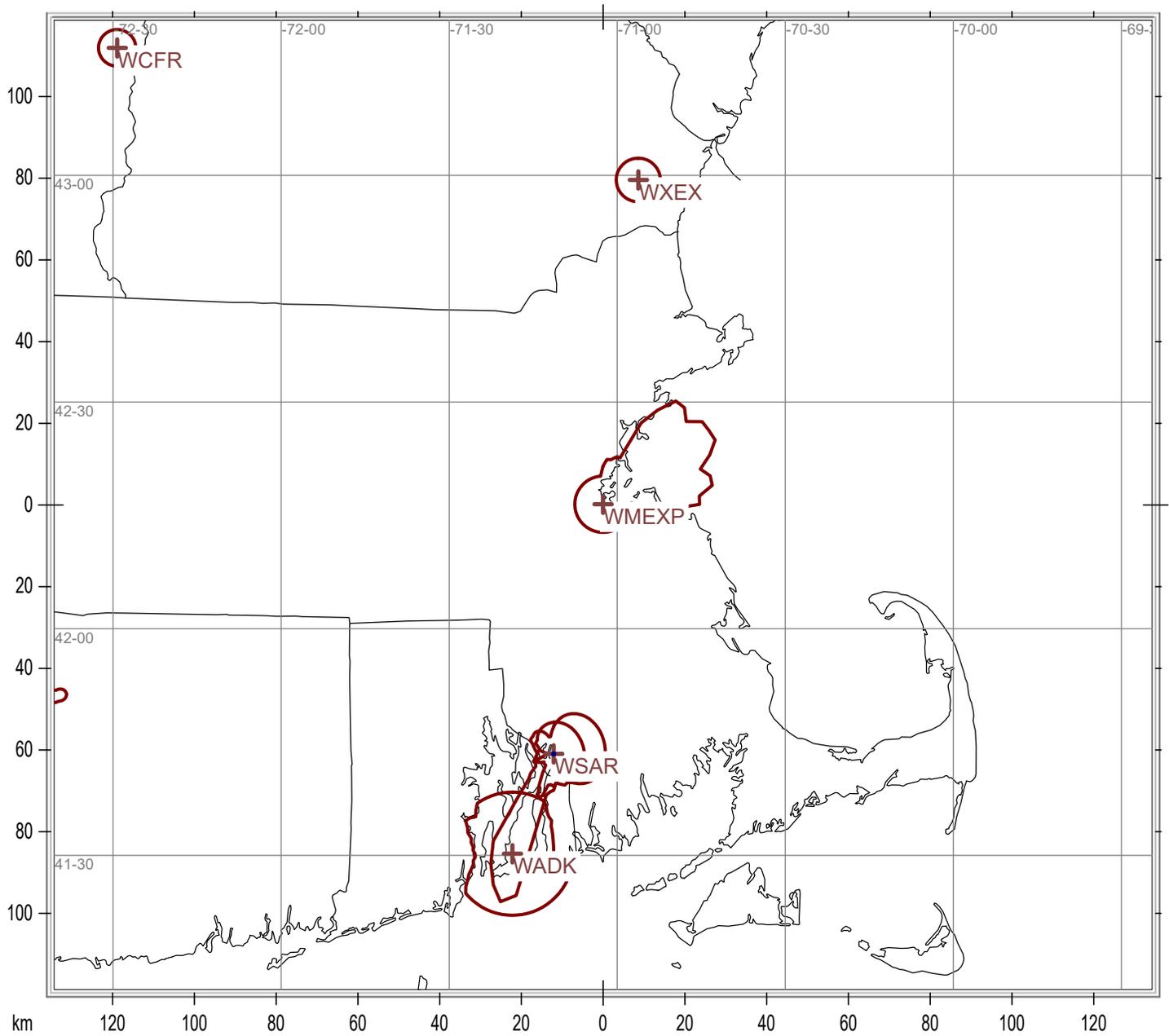


WMEXP 1510 KILOHERTZ 10 KW ND QUINCY, MASSACHUSETTS

State Borders      Lat/Lon Grid

# FIG 4 - DAY 3RD ADJ CHANNEL ALLOCATION STUDY

SHOWING 25 MV/M CONTOURS

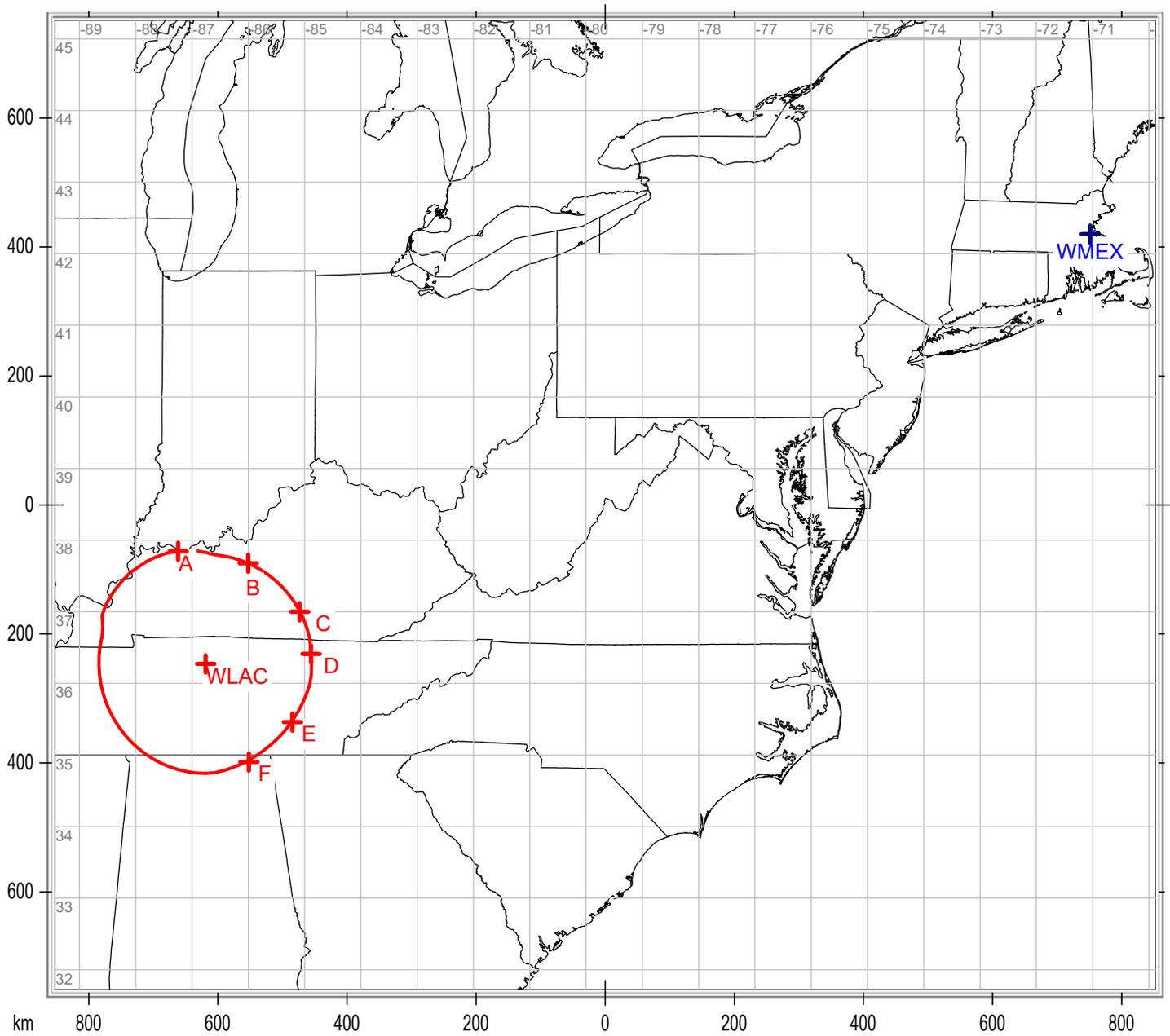


WMEX 1510 KILOHERTZ 10 KW ND QUINCY, MASSACHUSETTS

State Borders      Lat/Lon Grid

# FIGURE 5 - CRITICAL HOURS ALLOCATION MAP

SHOWING WLAC 0.1 MV/M CONTOUR AND WMEX STUDY POINTS

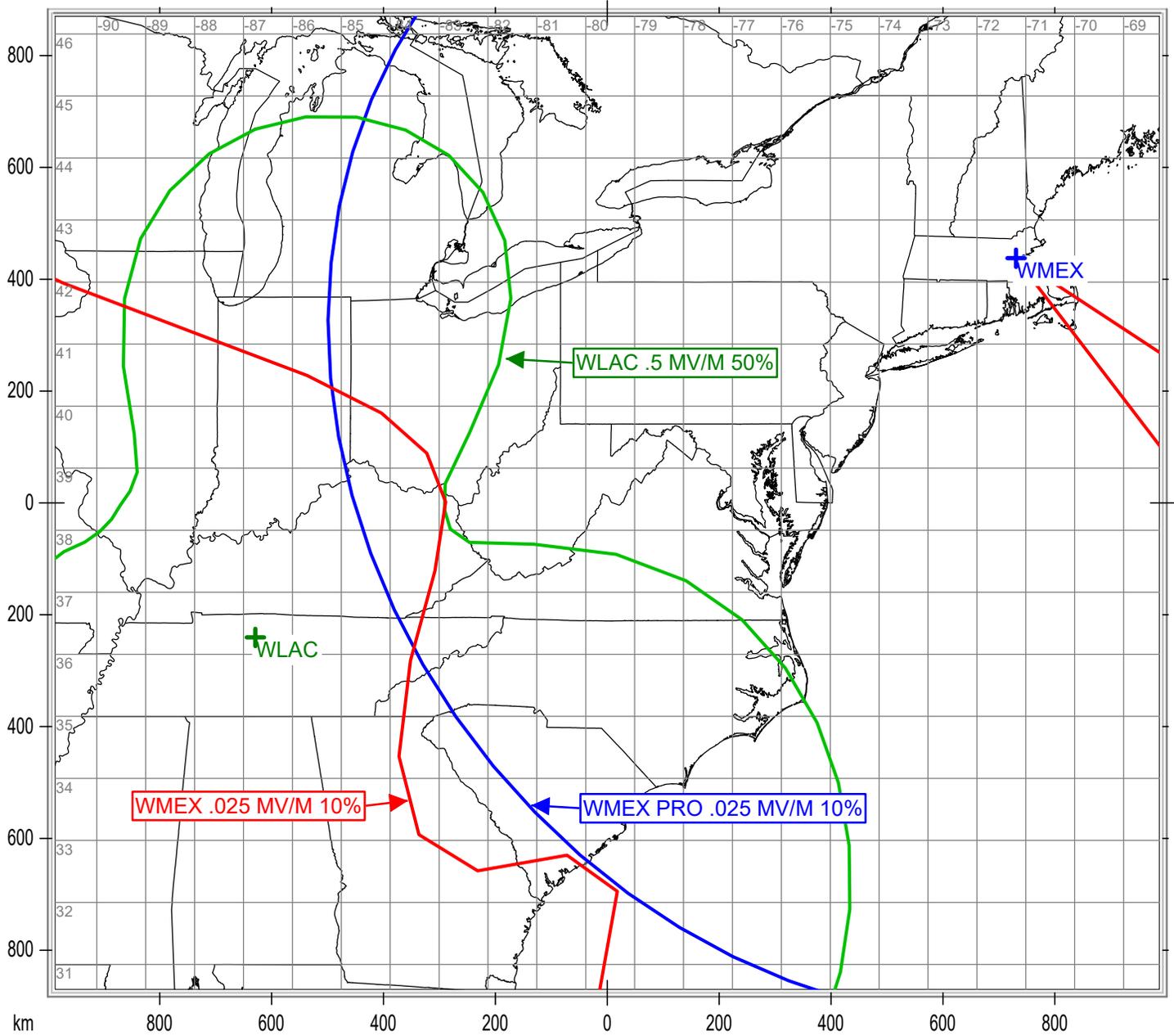


WMEX 1510 KILOHERTZ 2 KW ND QUINCY, MASSACHUSETTS

State Borders      Lat/Lon Grid

# FIG 6 -CLASS A CO-CHANNEL NIGHT ALLOCATION MAP

SHOWING .5 50% AND .025 10% MV/M SKYWAVE CONTOURS

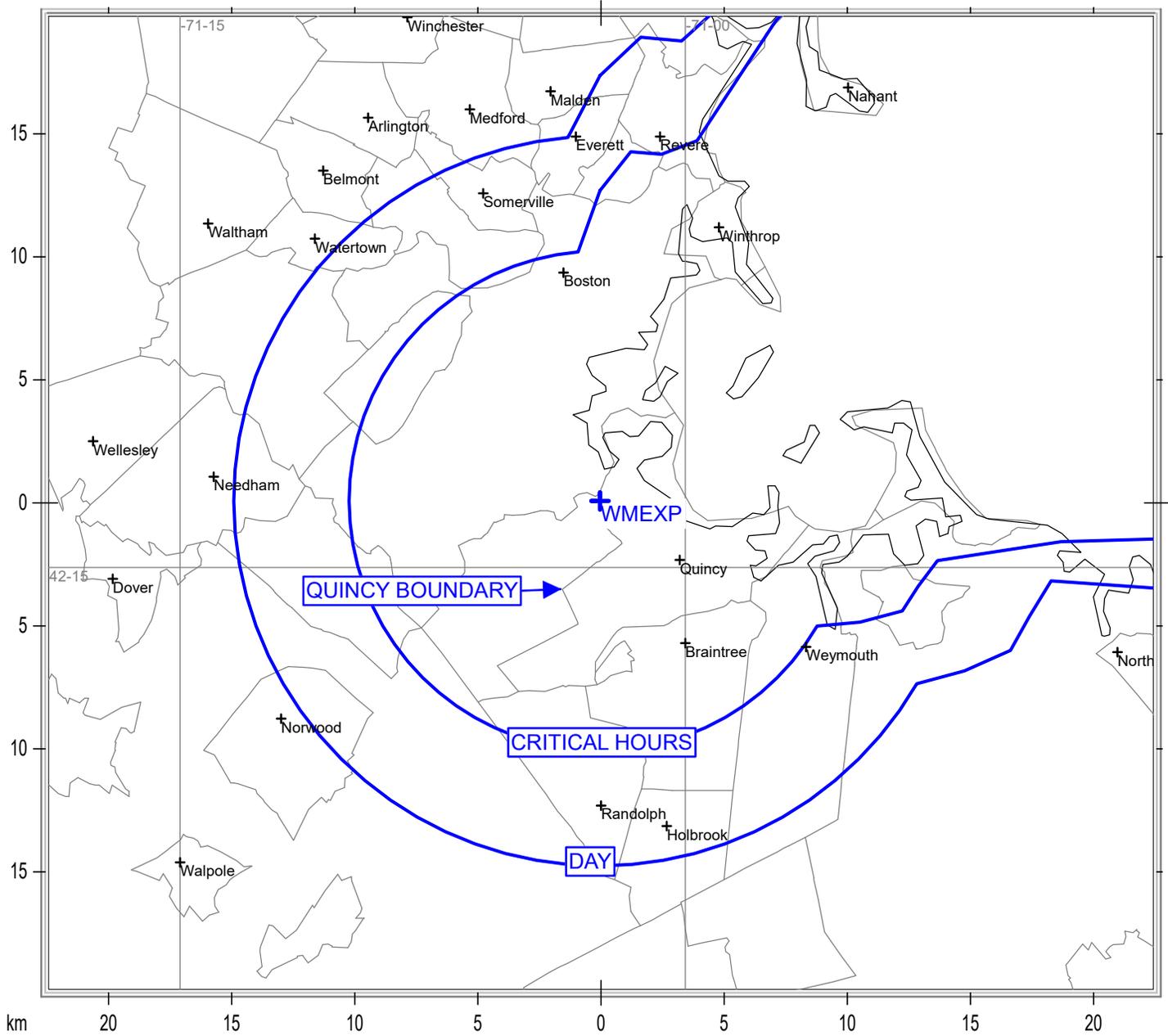


WMEX 1510 KILOHERTZ 0.1 KW ND QUINCY, MASSACHUSETTS

State Borders      Lat/Lon Grid

# FIGURE 7 - CITY OF LICENSE SERVICE MAP

SHOWING 5 MV/M CONTOURS

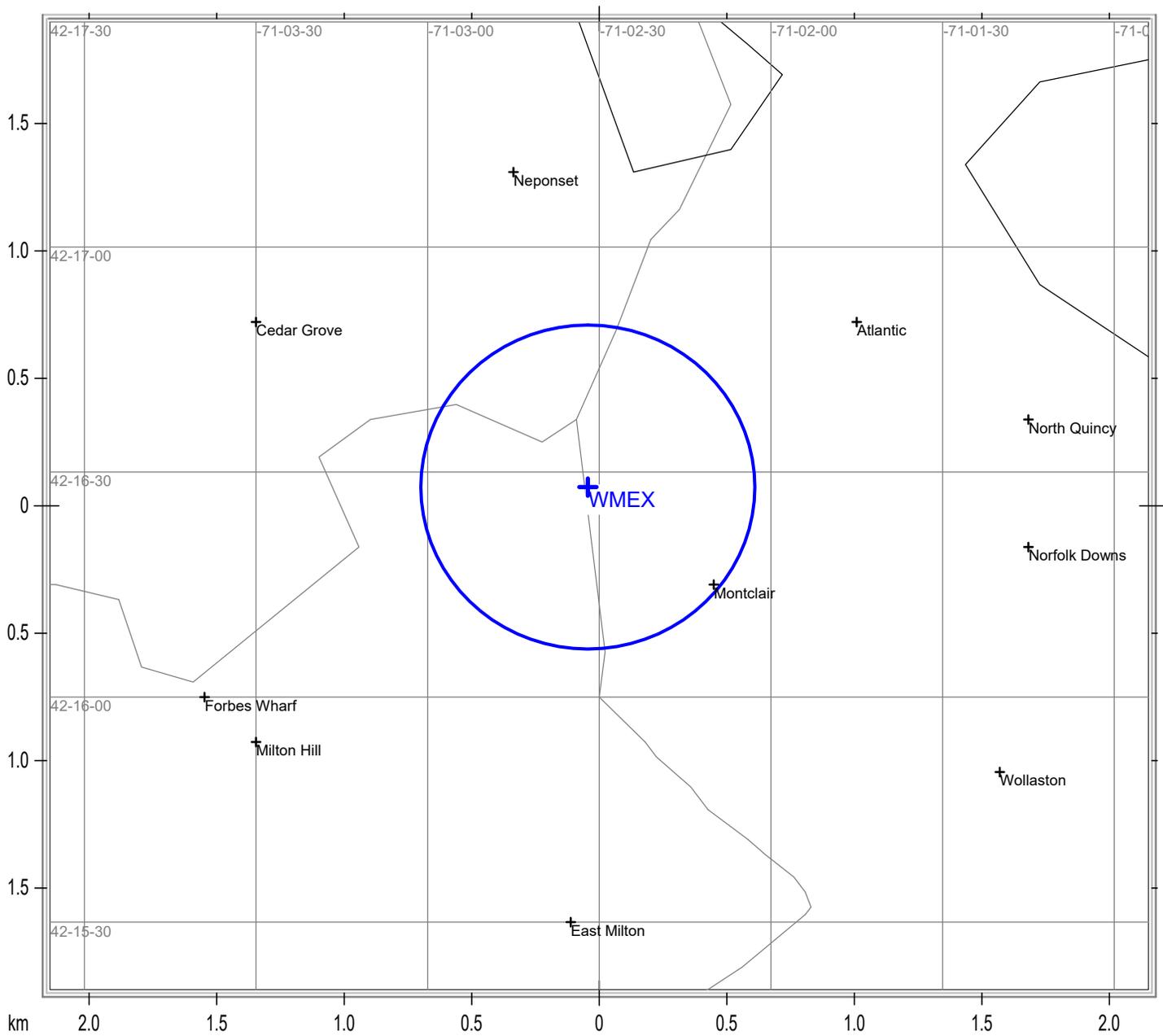


WMEXP 1510 KILOHERTZ 10 KW D 2 KW CH ND QUINCY, MASSACHUSETTS

State Borders    City Borders    Lat/Lon Grid

# FIGURE 8 -1000 MV/M MAP

SHOWING DAYTIME 10 KW ND 1000 MV/M CONTOUR



WMEX 1510 KILOHERTZ QUINCY, MASSACHUSETTS

State Borders City Borders Lat/Lon Grid

TABLE 1

WLAC CRITICAL HOURS ALLOCATION STUDY

FOR PROPOSED WMEX 2 KILOWATT NON-DIRECTIONAL PATTERN

WMEX 1510 KILOHERTZ

QUINCY, MASSACHUSETTS

Jun-18

<u>Point</u>	<u>North Latitude</u>	<u>West Longitude</u>	<u>Distance Kilometers</u>	<u>Bearing Degrees T</u>	<u>Permissible mV/m</u>	<u>Proposed mV/m</u>
A	37 50 39	87 14 48	1462	255.7	523.0	451.1
B	37 40 43	86 00 08	1371	253.2	474.8	451.1
C	36 59 59	85 05 15	1336	248.7	464.4	451.1
D	36 24 43	84 53 07	1355	245.9	481.5	451.1
E	35 27 31	85 13 05	1440	242.9	546.4	451.1
F	34 54 06	85 59 23	1533	242.6	617.2	451.1