

TECHNICAL EXHIBIT  
APPLICATION FOR MINOR CHANGE  
FM STATION WYXB (FACILITY ID 51432)  
INDIANAPOLIS, INDIANA

APRIL 5, 2002

CH 289B    50 KW-DA    150 M

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Technical Narrative

This Technical Exhibit supports a minor change application from FM station WYXB at Indianapolis, Indiana (Facility ID 51432). The current WYXB license specifies an operation on channel 289B (105.7 MHz) with a non-directional antenna system (BLH-6996). The effective radiated power (ERP) is 50 kilowatts (kW), horizontal and vertical polarization (H&V). The antenna height above average terrain (HAAT) is 137 meters. The transmitter site coordinates are 39-48-01, 86-04-39 (NAD-27).

Proposed Facilities

This application proposes to move the WYXB transmitter site, increase the antenna HAAT and change to a directional antenna (DA) system. There is no proposed change in ERP (50 kW), channel (289B) or city of assignments (Indianapolis, IN).

It is proposed to relocate WYXB to the tower currently employed by FM stations WNOU (Ch.226B), WFMS (Ch.238B) and WZPL (Ch.258B). The FCC antenna registration number for the structure is 1030144 and the coordinates are 39-46-03, 86-00-12. The proposed site is approximately 7.3 kilometers southeast of the present WYXB site. It is proposed to side-mount a directional antenna system on the existing tower with the center of radiation at 136.9 meters above ground level (AGL), 397.5 meters above mean sea level (AMSL). The proposed antenna HAAT will be 150 meters. The addition of the proposed

WYXB antenna system will not change the overall height of the existing structure. Figure 1 is a tower sketch of the proposed system.

Figure 2 provides the idealized relative field azimuth pattern for the proposed WYXB antenna system. The station is proposing to use a 6 bay ERI antenna system. Figure 2 includes a vertical plane relative field pattern for a 6 bay ERI antenna system.

The proposed WYXB transmitter site is approximately 339 kilometers from the closest point of the Canadian border. The site is more than 1700 kilometers from the closest point of the Mexican border. The closest FCC monitoring station is at Allegan, Michigan, approximately 315 kilometers to the north. The closest point of the National Radio Quiet Zone (VA/WV) is more than 450 kilometers to the east. The closest point of the Table Mountain Radio Quiet Zone (CO) is more than 1600 kilometers to the west. The closest radio astronomy site operating on TV channel 37 is at North Liberty, Iowa, approximately 519 kilometers to the west. These separations are considered sufficient to not be a concern for coordination purposes.

#### Predicted Coverage

Figure 3 is a map showing the predicted 70 dBu (3.16 mV/m) and 60 dBu (1 mV/m) contours. The map shows the Indianapolis city limits based on information contained in the 2000 US Census. The extent of the proposed WYXB contours is based on the FCC's normal prediction method using a digitized terrain database.

#### Allocation Study

Figure 4 includes a tabulation of separations from the proposed WYXB site, along with the FCC's minimum separation requirement with respect to other pertinent stations as specified in Section 73.207(b) of the Commission's Rules. The FCC's FM database was used as the basis for the separation study. The separation study indicates 4 short-spacings. Each will be discussed below. It is noted that the FCC's database contains an entry for a proposed interim operation on channel 289B at Terre Haute, Indiana (BIPH-20010724ACU). Discussions with the FCC staff reveal that this interim application can be ignored since it is a

typographical error on the interim applicant's form and should actually be for channel 298B at Terre Haute, where the channel is allotted.

The proposed WYXB short-spacing to station WQRK(FM) on channel 288A at Bedford, Indiana will be accommodated using Section 73.215 of the FCC rules (see sheet 3 of Figure 4). It is noted that there is predicted overlap between the WQRK maximum Class A (6 kW, 100 m) protected and interfering contours and the respective interfering and protected contours for the present (license) WYXB operation. The proposed WYXB operation will eliminate the overlap between its interfering contour and the WQRK protected contour. In addition, the proposed WYXB operation will result in a net reduction in the overlap received by its protected contour from the WQRK interfering contour (net reduction of 688 people and 30 square kilometers within overlap received regions). Although it is believed this complies with the FCC's allocation requirements, if necessary, a waiver is respectfully requested based on the allocation improvement (ie, less overlap) resulting from the proposed WYXB operation.

The separation from the present WYXB site to WUZR on channel 289A at Bicknell, Indiana is 165.5 kilometers. The proposed WYXB site increases the separation to 167.5 kilometers (ie, reduces the short-spacing). Station WUZR is considered a "3 kW Class A" assignment. In accordance with Section 73.213(c) of the FCC rules, station WYXB is permitted maximum Class B transmitting facilities (50 kW, 150 m) so long as the separation to WUZR is at least 163 kilometers.

The proposed WYXB short-spacing to WTSZ-FM on channel 289A at Eminence, Kentucky will be accommodated using Section 73.215 of the FCC rules (see sheet 4 of Figure 4).

The separation with WPFB-FM on channel 290B at Middletown, Ohio is a pre November 1964 grandfathered short-spacing and is addressed using Section 73.213(a) of the FCC rules (see sheet 5 of Figure 4). As shown, there will be a reduction in the overlap received by the WPFB-FM protected contour (3,271 people, 189 sq km). The map shows a small increase in the overlap received by the proposed WYXB protected contour (175 people, 43 sq km). Although Section 73.213(a) of the FCC rules refers to "interference" instead of

“overlap”, the small overlap populations and areas make it difficult to show “interference”. Regardless, we believe it is apparent that a similar finding will result if interference instead of overlap were shown. The reduction in overlap caused to WPFB-FM exceeds the small amount of overlap received by the proposed WYXB operation (a net improvement of 3096 people and 146 sq km). If necessary, a waiver of the FCC rules is respectfully requested for the WYXB/WPFB-FM allocation situation based on the net allocation improvement discussed above.

#### Radiofrequency Electromagnetic Field Exposure

The proposed WYXB facility was evaluated in terms of potential radio frequency (RF) energy exposure at ground level to workers and the general public. The proposed FM antenna center of radiation is located 136.9 meters above ground level. A relative field value of 0.34 is assumed for the FM antenna’s downward radiation (see Figure 2). Using the combined ERP level of 100 kW (50 kW horizontal polarization & 50 kW vertical polarization), the calculated power density at a point 2 meters above ground level is 10.6% of the FCC's recommended limit of  $0.2 \text{ mW/cm}^2$  for FM channels, applicable to general population/uncontrolled exposure areas. The calculated power density is less than 3% of the FCC’s limit for a “controlled” environment.

As noted above, FM stations WNOU, WFMS and WZPL are also located on the tower. According to the FCC’s FM database, the centers of radiation above ground level for the WNOU, WFMS and WZPL antennas are 300 meters, 294 meters and 290 meters respectively. The combined ERP levels (H+V) for the WNOU, WFMS and WZPL operations are 25 kW, 26 kW and 25 kW respectively. A conservative relative field value of 1.0 has been assumed for the WNOU, WFMS and WZPL calculations. The calculated power density levels for WNOU, WFMS and WZPL are 4.7%, 5.1% and 5.0% of the FCC’s “uncontrolled” environment standard. The combined WNOU, WFMS, WZPL, and proposed WYXB calculated levels would be less than 26% of the FCC’s “uncontrolled” environment exposure standard. Therefore, it is believed that the proposal complies with the FCC’s RF limits.

Access to the transmission system will be restricted and appropriately marked with warning signs. In the event that workers or other authorized personnel enter restricted

areas or climb the tower, appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RF protective clothing and/or RF exposure monitors, or scheduling work when the stations are at reduced power or shut down. The proposed WYXB operation appears to be otherwise categorically excluded from environmental processing.

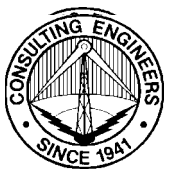
If there are questions concerning the technical portion of this application, please contact the office of the undersigned.

John A. Lundin

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April 5, 2002

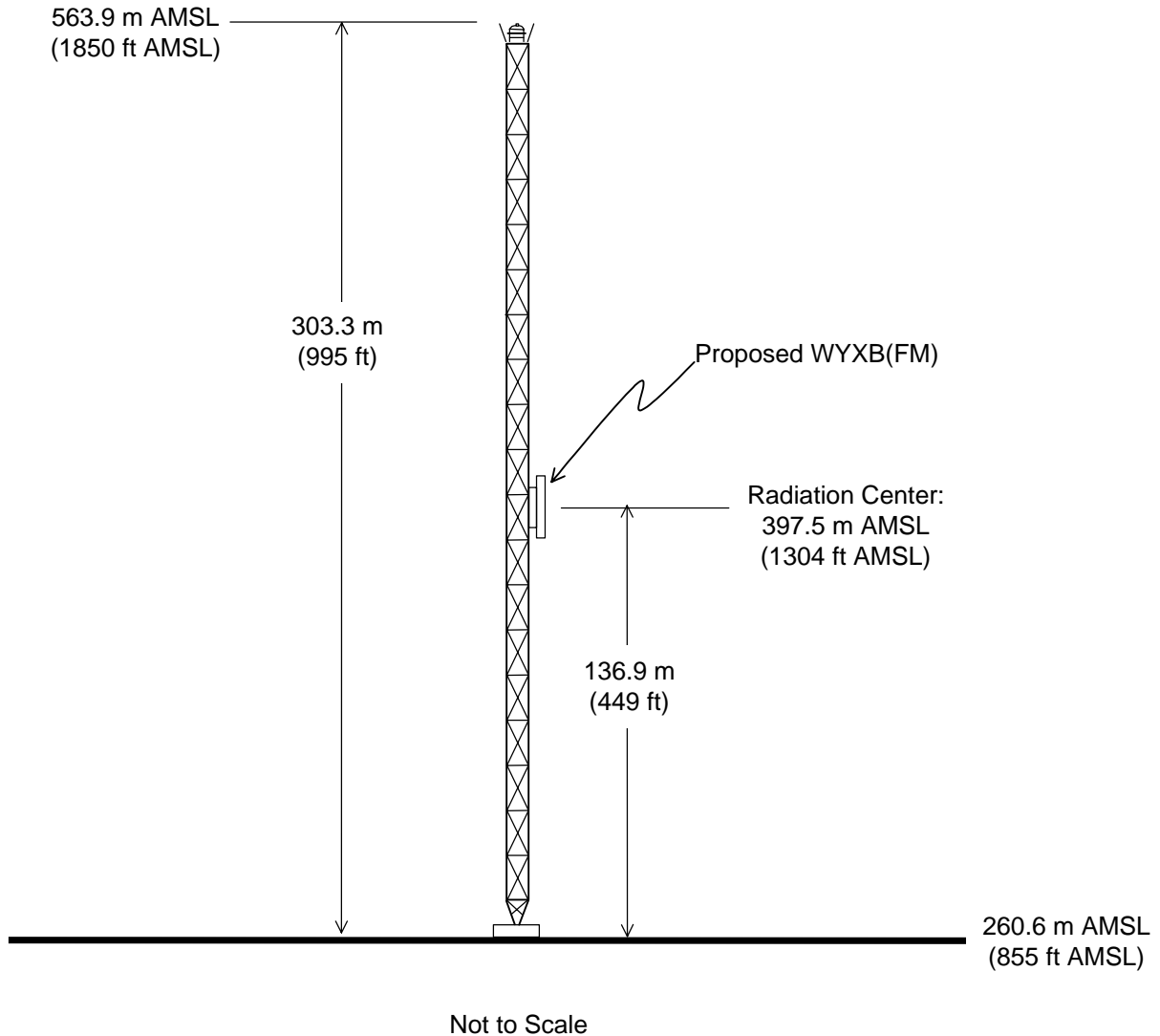
Figure 1



APRIL 2002

Tower Reg. No. 1030144

Site Coordinates:  
39° 46' 03" N  
86° 00' 12" W  
(NAD 27)

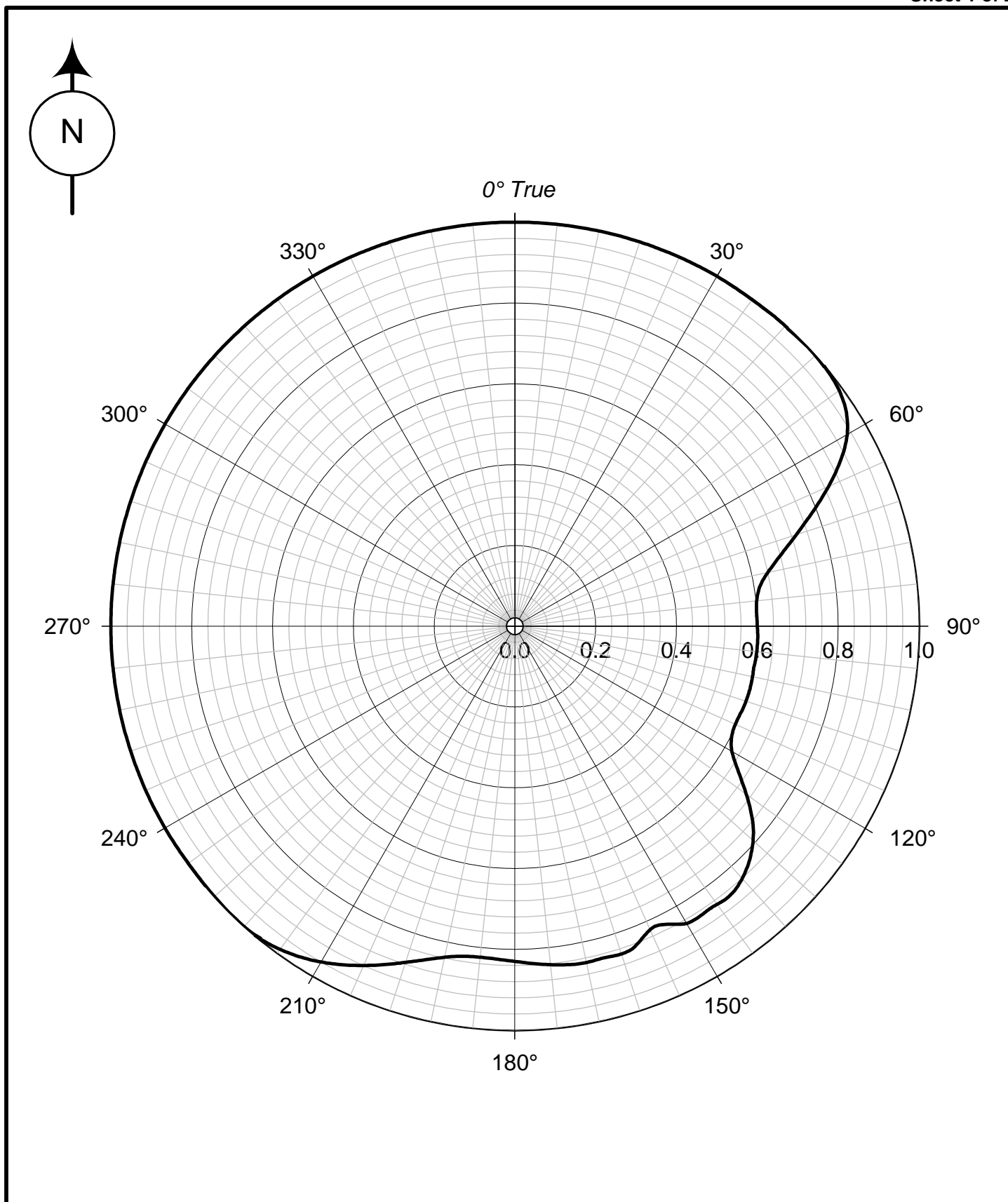


## **PROPOSED ANTENNA AND SUPPORTING STRUCTURE**

FM STATION WYXB  
INDIANAPOLIS, INDIANA  
CH 289B 50 KW-DA 150 M

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





## HORIZONTAL PLANE ANTENNA PATTERN

FM STATION WYXB  
INDIANAPOLIS, INDIANA  
CH 289B 50 KW-DA 150 M  
du Treil, Lundin & Rackley, Inc. Sarasota, Florida

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

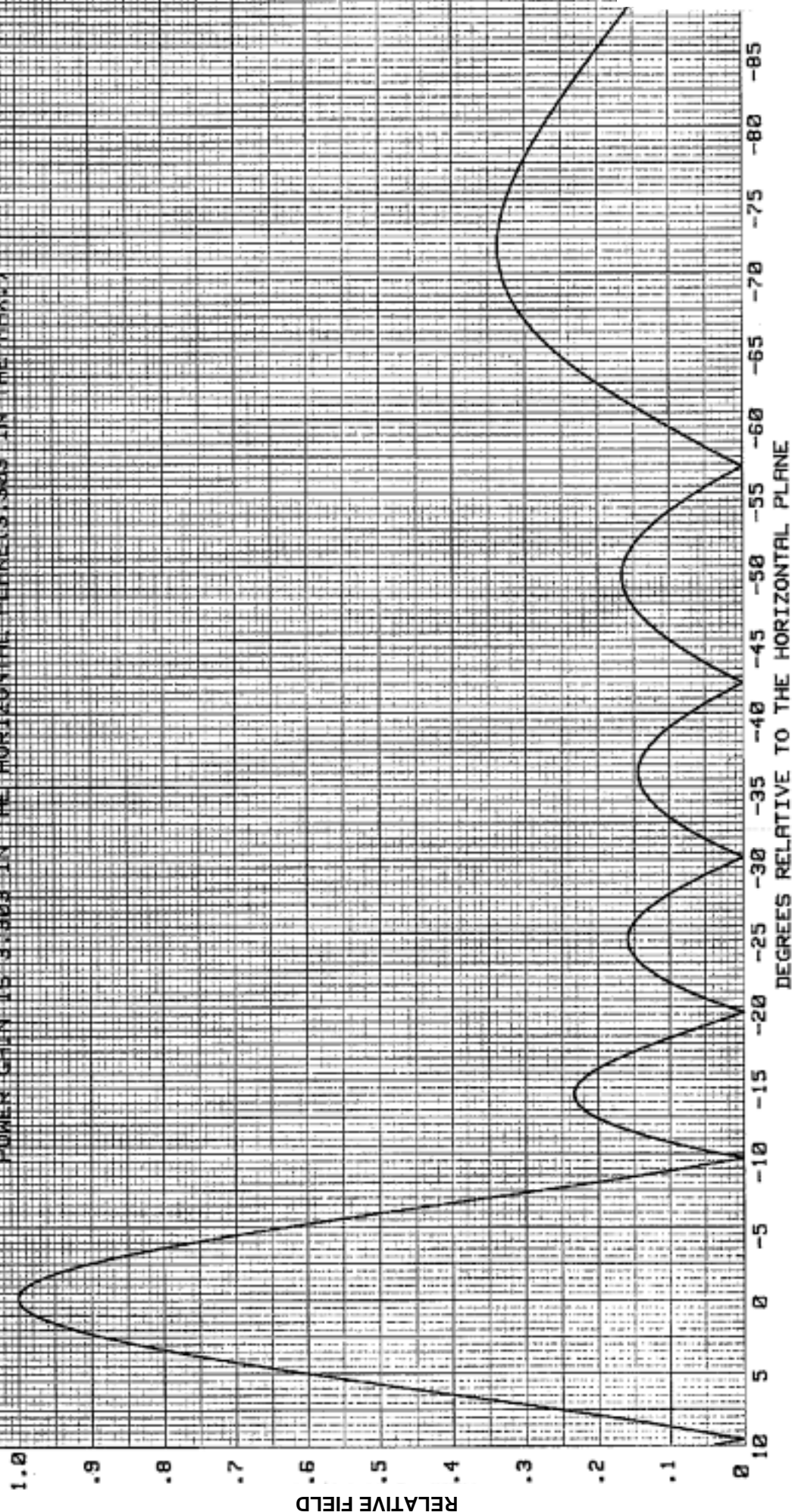
-----THEORETICAL-----  
VERTICAL PLANE RELATIVE FIELD

6 ERI TYPE SHP SHPX; LP, OR LPX ELEMENTS  
0 DEGREE(5) BEAM TILT  
2 PERCENT FIRST NULL FILL  
0 PERCENT SECOND NULL FILL

MAY 24, 1993  
ELEMENT SPACING:  
1.0 WAVELENGTH

FIGURE F6

POWER GAIN IS 3.303 IN THE HORIZONTAL PLANE(3.303 IN THE MBX.)

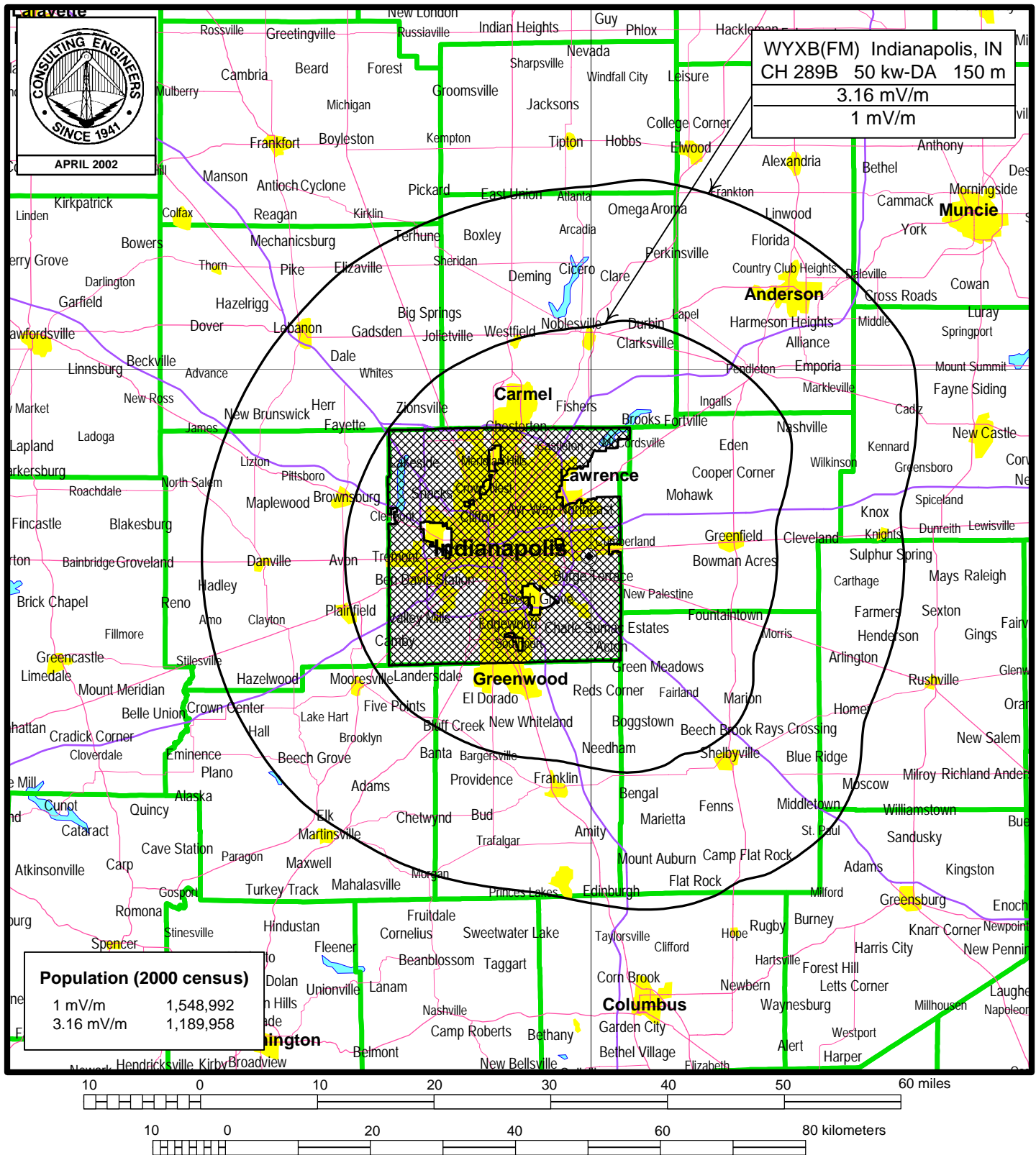


RELATIVE FIELD

DEGREES RELATIVE TO THE HORIZONTAL PLANE



Figure 3



## PREDICTED COVERAGE CONTOURS

FM STATION WYXB  
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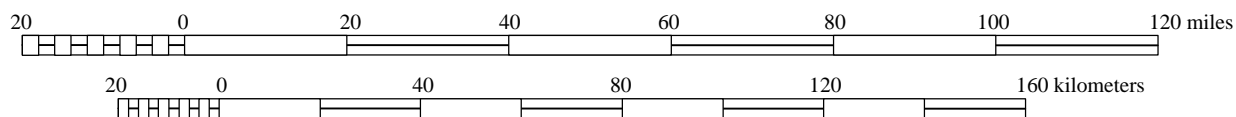
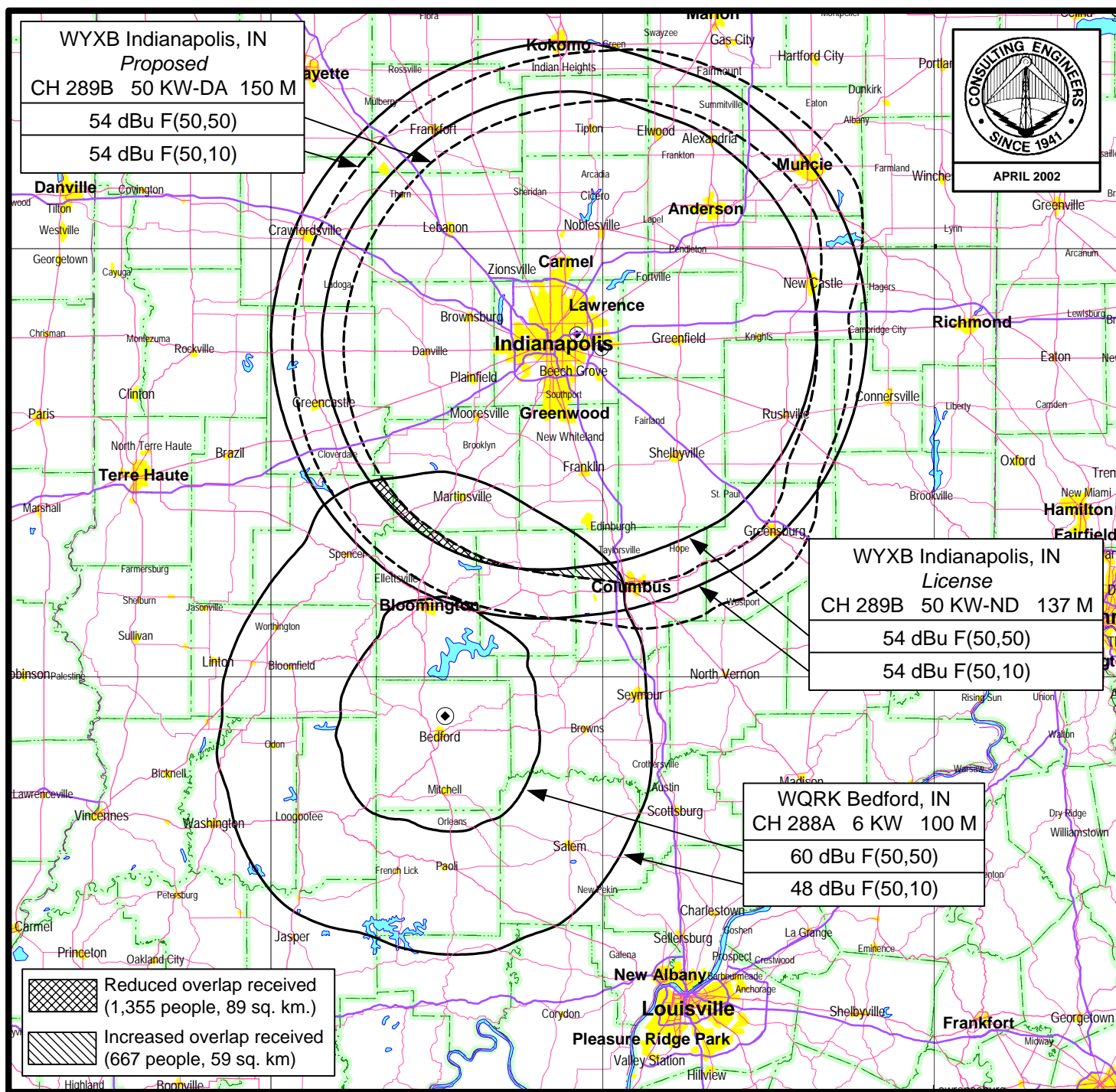
Separation Buffer: 65 km  
Coordinates: 39-46-03 86-00-12

[illegible]

**FIGURE 4**  
Sheet 2 of 5

Call FID	City St	Status	File Num.	Chan. Freq.	ERP-kW HAAT-m	DA ID	Latitude Longitude	73. 215	Bear. deg.	Separation (km)	Required (km)
WZOM 40711	DEFIANCE OH	LIC C	BLH 19941109KD	289A 105.7	6.000 100	N	41-13-23 084-22-36	N	39.8	212.46	178.0 Clear
WTCJFM 83101	TELL CITY IN	LIC C	BLH 20000503AAB	289A 105.7	4.800 111	Y 31336	37-55-33 086-43-19	N	197.1	213.75	178.0 Clear
WTCJFM 83101	TELL CITY IN	APP C	BPH 20000414ACB	289A 105.7	6.000 100	Y 32742	37-51-55 086-52-29	Y	199.9	224.32	178.0 Clear
WJOT-F 13537	WABASH IN	LIC C	BLH 19930811KC	290A 105.9	6.000 97	N	40-49-54 085-48-36	N	7.8	119.30	113.0 Clear
WPFBFM 54833	MIDDLETOWN OH	LIC C	BMLH 20011120AAL	290B 105.9	34.00 181	N	39-30-57 084-21-05	N	100.7	144.53	169.0 Short
<b>(Section 73.213(a) of FCC Rules employed for proposed WYXB operation, see sheet 5 of Figure 4)</b>											
WMMC 28282	MARSHALL IL	LIC C	BLH 20000919ABV	290A 105.9	3.000 100	N	39-21-38 087-47-31	N	254.1	160.21	113.0 Clear
WMMC 28282	MARSHALL IL	APP C	BPH 20011127AAM	290A 105.9	2.300 161	N	39-21-10 087-49-20	N	254.1	162.96	113.0 Clear
WWWY 61195	NORTH VERNON IN	LIC C	BLH 19850905KC	291B 106.1	50.00 148	N	39-04-02 085-42-10	N	161.6	81.94	74.0 Clear
WVXI 74304	CRAWFORDSVILLE IN	LIC C	BLED 19960819KB	292A 106.3	3.400 134	N	40-03-19 086-55-57	N	292.3	85.63	69.0 Clear

**\*\*\* End of Separation Study \*\*\***



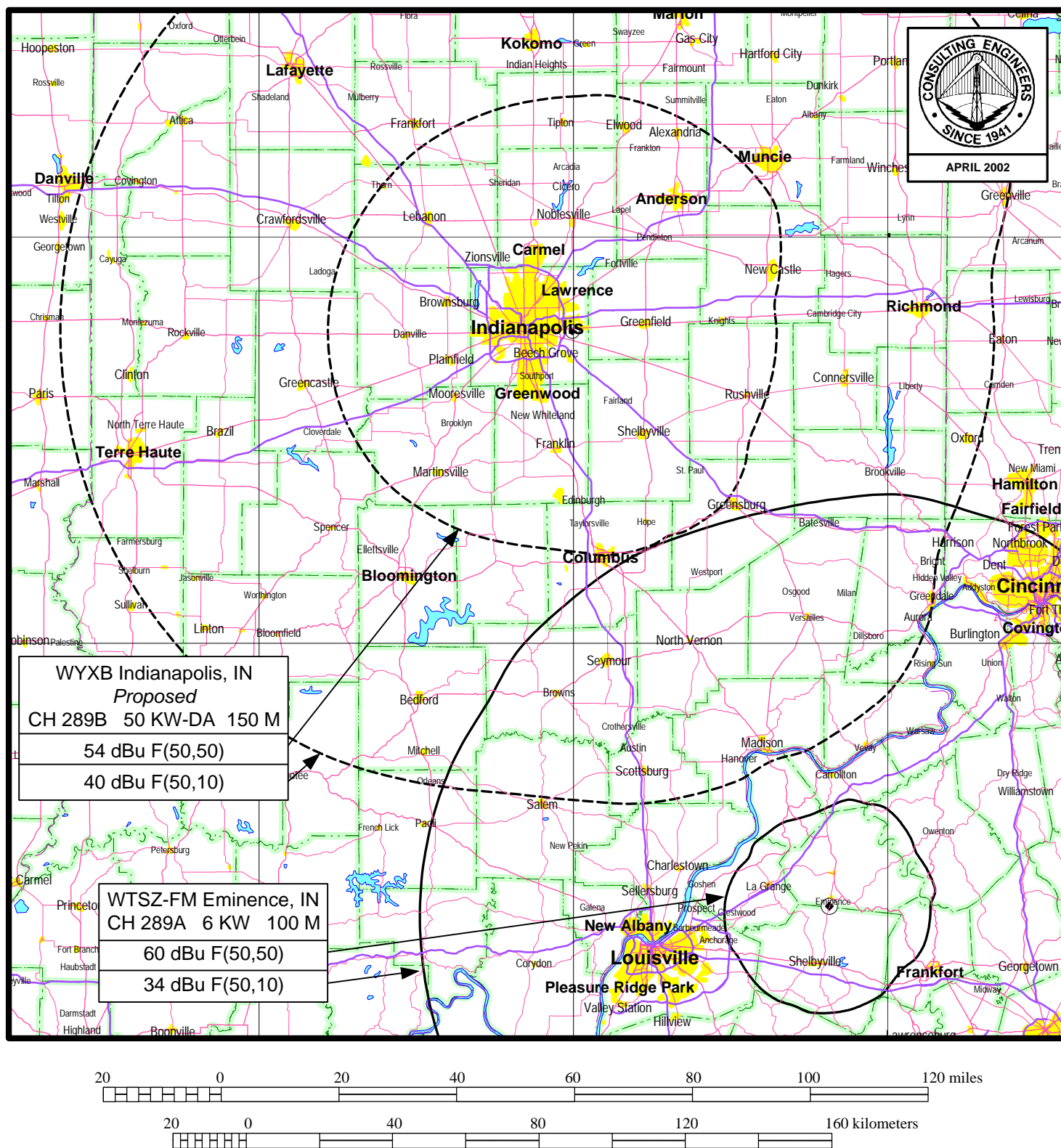
# ALLOCATION MAP

## RADIO STATION WYXB

## INDIANAPOLIS, INDIANA

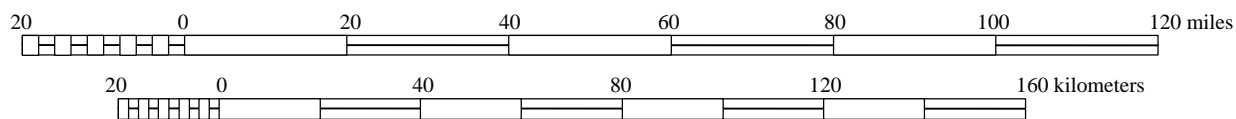
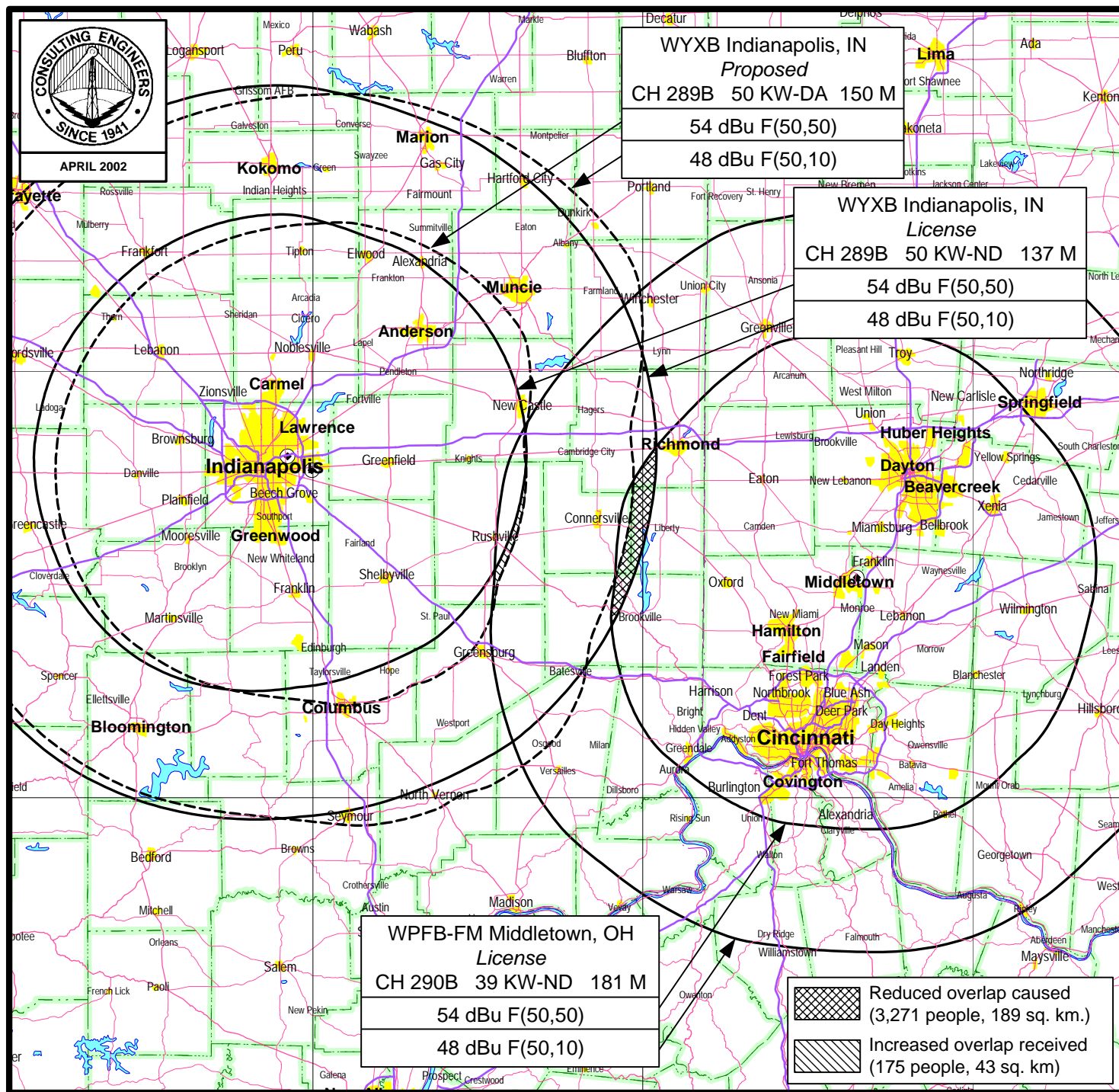
### CH 289B 50 KW (MAX-DA) 150 M

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# **ALLOCATION MAP** **RADIO STATION WYXB** **INDIANAPOLIS, INDIANA** **CH 289B 50 KW (MAX-DA) 150 M** du Treil, Lundin & Rackley, Inc. Sarasota, Florida





# ALLOCATION MAP

## RADIO STATION WYXB

## INDIANAPOLIS, INDIANA

## CH 289B 50 KW (MAX-DA) 150 M

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