

**December 2023  
WJOD(FM) Channel 277C3  
Asbury, IA  
Allocation Study**

The attached spacing study shows that the proposed operation meets the co-channel and adjacent channel spacing requirements for Class C3 stations as prescribed in §73.207 of the Commission's Rules, with the exception of a short-spacing to the licensed operation of KNEI-FM on Channel 278C2 at Waukon. Processing pursuant to §73.215 of the Commission's Rules is requested with respect to KNEI-FM, and the attached allocation study map is included to demonstrate the lack of prohibited contour overlap with that facility.

## SEARCH PARAMETERS

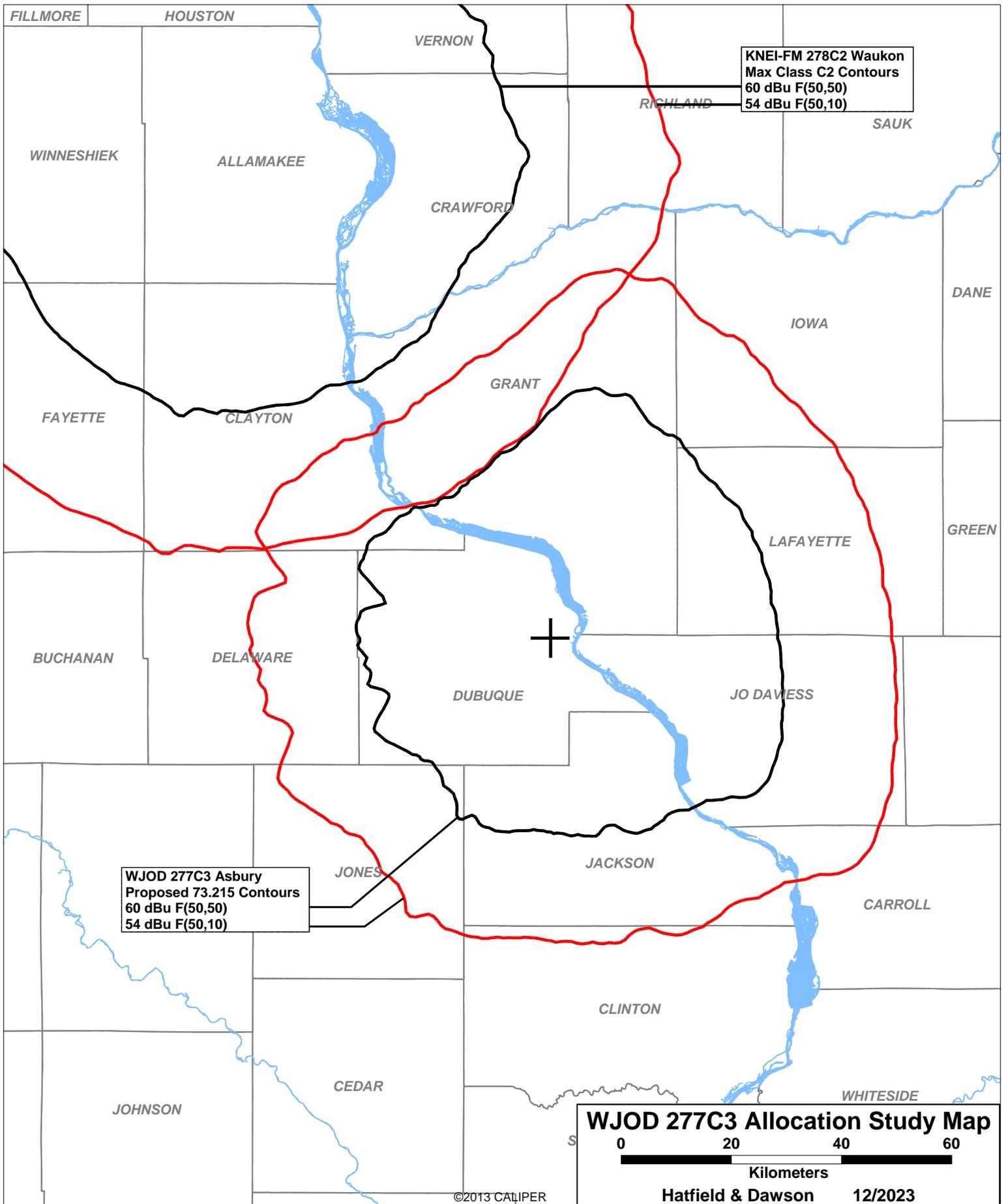
FM Database Date: 20231207

Channel: 277C3 103.3 MHz  
 Latitude: 42 30 10.0 (NAD83)  
 Longitude: 90 42 24.0  
 Safety Zone: 32 km  
 Job Title: WJOD 277C3 ASR 1018140

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Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
K223DA LIC	BELLEVUE IA		223D 92.5	0.250 0.0	42 15 45.4 90 25 48.3	139.5	35.08 0.00	0 TRANS
KZIA LIC	CEDAR RAPIDS IA		275C1 102.9	100.000 287.0	42 3 25.0 91 41 42.6	239.0	95.40 19.40	76 CLEAR
WJOD LIC	ASBURY IA		277C3 103.3	6.600 196.0	42 24 16.0 90 34 12.5	134.3	15.67 -137.33	153 SHORT
K277DM LIC	CHARLES CITY IA		277D 103.3	0.169 0.0	43 3 11.8 92 40 14.6	291.6	171.97 0.00	0 TRANS
KAZR LIC	PELLA IA		277C1 103.3	100.000 227.0	41 32 17.0 93 17 57.7	244.3	239.99 28.99	211 CLEAR
W277AE LIC	MADISON WI		277D 103.3	0.120 0.0	43 2 8.0 89 30 25.0	58.4	114.65 0.00	0 TRANS
KNEI-FM LIC	WAUKON IA		278C2 103.5	37.000 175.0	43 18 27.9 91 27 18.5	326.0	108.32 -8.68	117 SHORT
ABSOLUTE MINIMUM 73.215 SPACING = 106 KM								
WLLR-FM LIC	DAVENPORT IA		279C0 103.7	100.000 363.0	41 32 49.1 90 28 35.5	169.8	107.86 20.86	87 CLEAR

==== END OF FM SPACING STUDY FOR CHANNEL 277 =====



**December 2023**  
**WJOD(FM) Channel 277C3**  
**Asbury, IA**  
**RF Exposure Study**

**Facilities Proposed**

The proposed operation will be on Channel 277C3 (103.3 MHz) with a maximum lobe effective radiated power of 18 kilowatts. Operation is proposed with a 4-element circularly-polarized directional antenna. The antenna will be side-mounted on an existing tower with FCC Antenna Structure Registration Number 1018140.

**RF Exposure Calculations**

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.4 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

*D* is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 500 meters. Values past this point are increasingly negligible.

The exact make and model of antenna have not yet been selected. Therefore, calculations of the power density produced by the proposed antenna system assume a Type 1 element pattern, which is the "worst case" element pattern in the Commission's FMModel software. The highest calculated ground level power density occurs at a distance of 20 meters from the base of the antenna support structure. At this point the power density is calculated to be 57.4  $\mu W/cm^2$ .

Calculations of the power density produced by WJOD and the other station at this transmitter site are summarized in the following table:

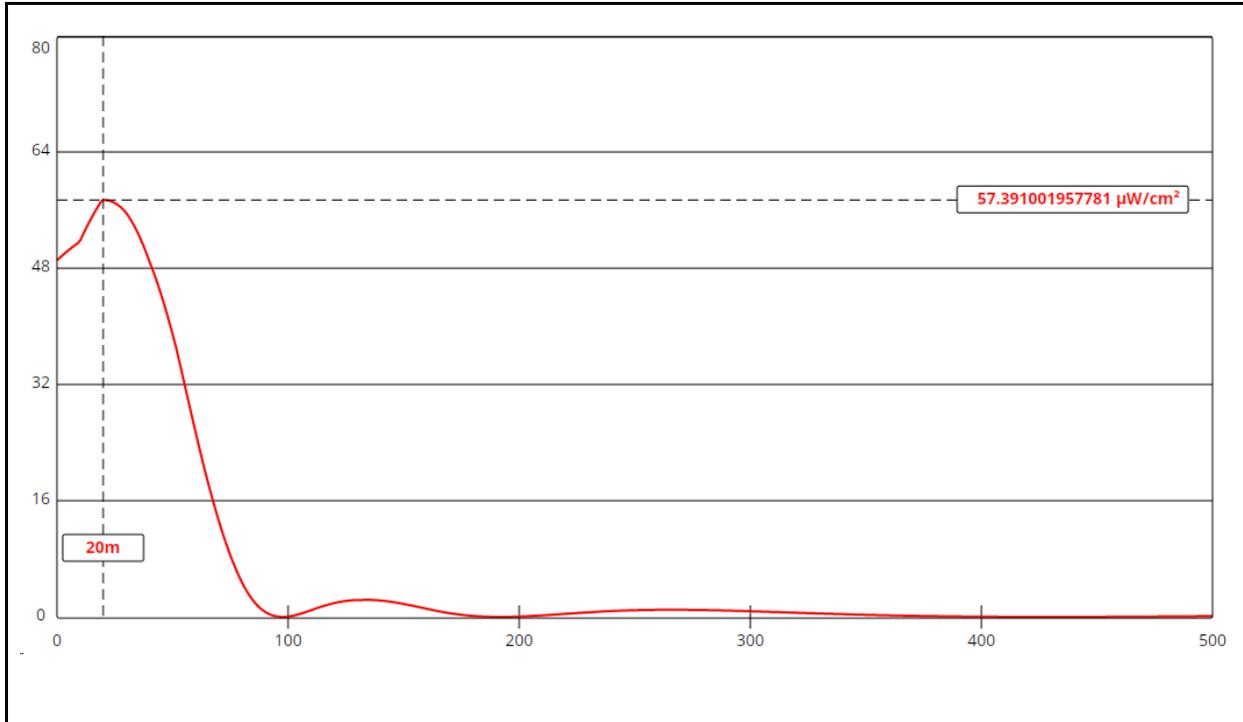
Call	ERP Antenna Model	Relative Field	Height AGL	Calculated Exposure	Gen Pop FCC Limit	% of Limit
WJOD 277C3	18 kW H 18 kW V 4-bay full-wave	FModel Type 1	112.8 m	57.4 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	28.7%
KLYV 287C2	50 kW H 50 kW V RCA BFC-6B	FModel Type 4	97 m	43.1 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	21.6%

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of WJOD and the present operation of KLYV (were their maxima to coincide, which they do not) is 50.25% of 200  $\mu\text{W}/\text{cm}^2$  (the FCC standard for uncontrolled environments).

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.

### **AM Station WDBQ**

The translator antenna will be installed on the tower used by AM station WDBQ 1490 kHz. WDBQ operates with 1 kilowatts nondirectional daytime and nighttime. The radiator is 217.6 electrical degrees tall, or 60.4% of the station wavelength. Using Tables 1-4 in OET Bulletin No. 65, the fencing distance requirement for this station is 1 meter from the tower base. The tower is fenced to at least this distance.



**Ground-Level RF Exposure**

**OET FMModel**

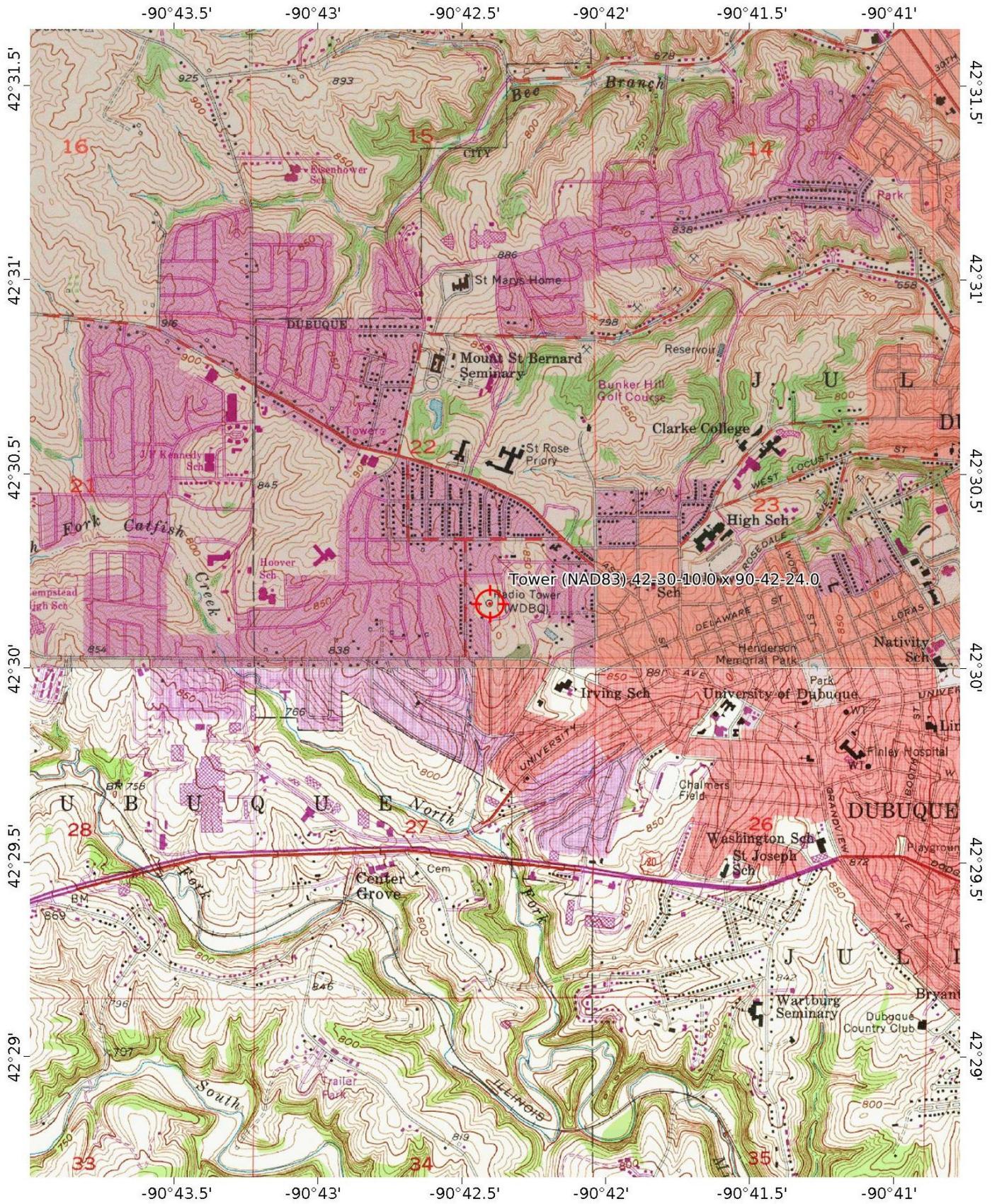
**WJOD 277C3 Asbury**

Antenna Type: Type 1 assumed  
 No. of Elements: 4  
 Element Spacing: 1.0 wavelength

Distance: 500 meters  
 Horizontal ERP: 18 kW  
 Vertical ERP: 18 kW

Antenna Height: 112.8 meters AGL

Maximum Calculated Power Density is 57.4  $\mu\text{W}/\text{cm}^2$  at 20 meters from the antenna structure.



Mercator Projection  
 WGS84  
 UTM Zone 15T  
 CALTOPO



Hatfield & Dawson Consulting Engineers

