

# *APPLICATION FOR CONSTRUCTION PERMIT*

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W226CH – CARTHAGE, ILLINOIS  
FACILITY ID: 140186  
99.1 MHz / 250 W ERP ND

HANCOCK COUNTY BROADCASTING, LLC

MARCH 2020

## **APPLICATION FOR CONSTRUCTION PERMIT**

The following engineering statement and attached exhibits have been prepared for **Hancock County Broadcasting, LLC** ("Hancock"), licensee of FM translator station W226CH at Macomb, Illinois, and are in support of their application for construction permit to modify that facility.<sup>1</sup> This application proposes a change in the community of license, change in the channel of operation, and a relocation of the facility.

W226CH is currently licensed to Macomb, Illinois, and serves as a fill-in translator for AM broadcast station WCAZ, formerly also at Macomb, Illinois, but now located at Carthage, Illinois with a pending license application for the relocated facility.<sup>2</sup> The license for W226CH specifies operation on channel 226, with a maximum effective radiated power of 175 Watts, vertically polarized, at a center of radiation of 240 meters above mean sea level, utilizing a directional antenna. The translator, as proposed, would operate on channel 256 with a maximum effective radiated power of 250 Watts, circularly polarized, at a center of radiation of 287.8 meters above mean sea level utilizing a non-directional antenna. As mentioned, the translator would be relocated from its current licensed site to the tower that serves as the antenna for WCAZ. A change in the community of license from Macomb to Carthage, Illinois, the authorized community of license for WCAZ, is also proposed.

WCAZ is a class D AM station, with no nighttime authorization. The technical parameters for W226CH specified on the current license were applicable to that facility when WCAZ was

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<sup>1</sup> The Facility ID for W226CH, currently at Macomb, Illinois, is 140186.

<sup>2</sup> See WCAZ construction permit under BP-20190705AAE, and pending license application under BL-20200204AAV.

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located in Macomb, and resulted in a translator 60 dBu service contour at the WCAZ twenty-five-mile site radius. A relocation of the translator to the WCAZ tower site, and corresponding change in the technical parameters, would result in prohibited first adjacent contour overlap with KGRC(FM) at Hannibal, Missouri.<sup>3</sup> Additionally, the current licensed technical parameters for W226CH specify a site that is *inside* the 45 dBu service contour of KGRC(FM). Exhibit E-1 illustrates these constructs. As a result, a change in the channel of operation from channel 226 to channel 256 is respectfully requested.

The proposed relocation of W226CH from its licensed site to the proposed site would constitute a minor change. The proposed 60 dBu service contour overlaps the licensed 60 dBu service contour. Exhibit E-2 illustrates both the licensed and proposed 60 dBu service contours, and demonstrates that the licensed contour is very nearly wholly contained within the proposed contour.

W226CH is authorized as a fill-in translator for WCAZ. The modification to the licensed technical parameters proposed under this application would continue to qualify as a fill-in translator. Exhibit E-3 illustrates the proposed translator 60 dBu service contour, along with the authorized WCAZ 2 mV/m service contour, and a twenty-five-mile radius centered on the midpoint of the WCAZ transmitter site. As this map demonstrates, the predicted 60 dBu service contour would be wholly contained within both of the WCAZ constructs.

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<sup>3</sup> The Facility ID for KGRC(FM) at Hannibal, Missouri is 62332.

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The proposed translator complies with the provisions of Section 74.1204 of the Commission's Rules. Due to the channel of operation, Section 74.1205 is not applicable. Exhibit E-4 is a tabular interference study for the proposed facility. This study demonstrates that the Section 74.1204 contour overlap provisions would be met to all relevant authorizations. This tabular interference study is graphically depicted in the contour map that comprises Exhibit E-3. Additionally, the proposed change in the channel places the proposed transmitter site outside of the 45 dBu service contour of all co-channel and first adjacent channel proposals or authorizations. This, therefore, mitigates the potential for interference to other facilities in the region.

The proposed facility would not constitute a significant environmental impact and is exempt from environmental processing. The translator antenna would utilize an existing tower that is registered with the Commission. The addition of the translator antenna to this structure would not increase the existing environmental impact already present from the tower.

Additionally, the proposed facility would not constitute a radiofrequency radiation hazard to persons at the site. The Commission's online *FM Model* utility returns a calculated maximum power density of 0.329  $\mu\text{W}/\text{cm}^2$  at a distance of 37 meters from the tower base. This value complies with the uncontrolled environment condition of the Commission's safety standard, and is sufficiently low to categorically exclude the facility. The proposed Shively 6832-3 antenna is considered a "type-2" antenna, and was analyzed as such.

Hancock certifies that it will coordinate with all other users of the site to ensure that workers and other personnel are not exposed to levels of radiofrequency radiation in excess of the

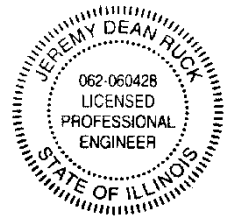
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applicable safety standards. Coordination activities will include, but are not necessarily limited to, a reduction in transmitter power or cessation of operation.

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature  
License Expires November 30, 2021

Jeremy D. Ruck, PE  
March 18, 2020

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3.18.2020

**W226CH**

BLFT20180912AAB  
Latitude: 40-25-09.50 N  
Longitude: 091-06-21.60 W  
ERP: 0.175 kW  
Channel: 226  
Frequency: 93.1 MHz  
AMSL Height: 240.0 m  
Horiz. Pattern: Directional

**W226CH.X**

PROPOSED  
Latitude: 40-24-31.50 N  
Longitude: 091-10-12.60 W  
ERP: 0.25 kW  
Channel: 256  
Frequency: 99.1 MHz  
AMSL Height: 287.8 m  
Horiz. Pattern: Omni

Licensed W226CH  
Transmitter Site

Proposed W226CH/WCAZ  
Transmitter Site

Prohibited Contour Overlap  
Resulting from FX Relocation

*Jeremy Ruck & Associates, Inc.*

- KGRC(FM) 60 dBu Service Contour
- KGRC(FM) 45 dBu Service Contour
- W226CH Proposed 54 dBu F(50,10) Contour
- Prohibited Contour Overlap

Exhibit E-1  
Service Contour Comparison  
W226CH - Carthage, Illinois  
Hancock County Broadcasting, LLC  
March, 2020

Scale 1:750,000

0 10 20 30 km

**W226CH.X**

PROPOSED

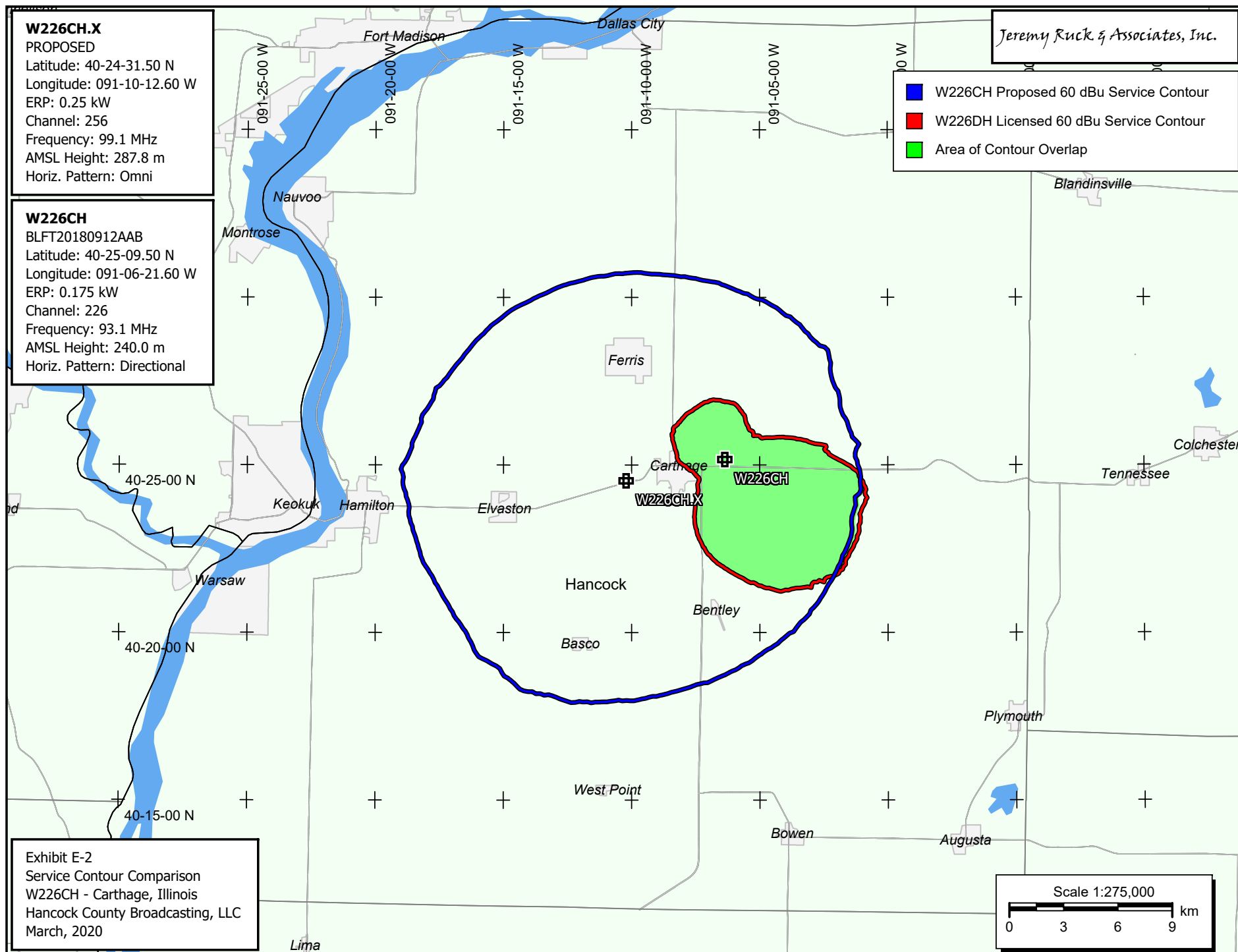
Latitude: 40-24-31.50 N  
Longitude: 091-10-12.60 W  
ERP: 0.25 kW  
Channel: 256  
Frequency: 99.1 MHz  
AMSL Height: 287.8 m  
Horiz. Pattern: Omni

**W226CH**

BLFT20180912AAB  
Latitude: 40-25-09.50 N  
Longitude: 091-06-21.60 W  
ERP: 0.175 kW  
Channel: 226  
Frequency: 93.1 MHz  
AMSL Height: 240.0 m  
Horiz. Pattern: Directional

*Jeremy Ruck & Associates, Inc.*

- W226CH Proposed 60 dBu Service Contour
- W226DH Licensed 60 dBu Service Contour
- Area of Contour Overlap



**W226CH.X**

BLFT20180912AAB

Latitude: 40-24-31.50 N

Longitude: 091-10-12.60 W

ERP: 0.25 kW

Channel: 256

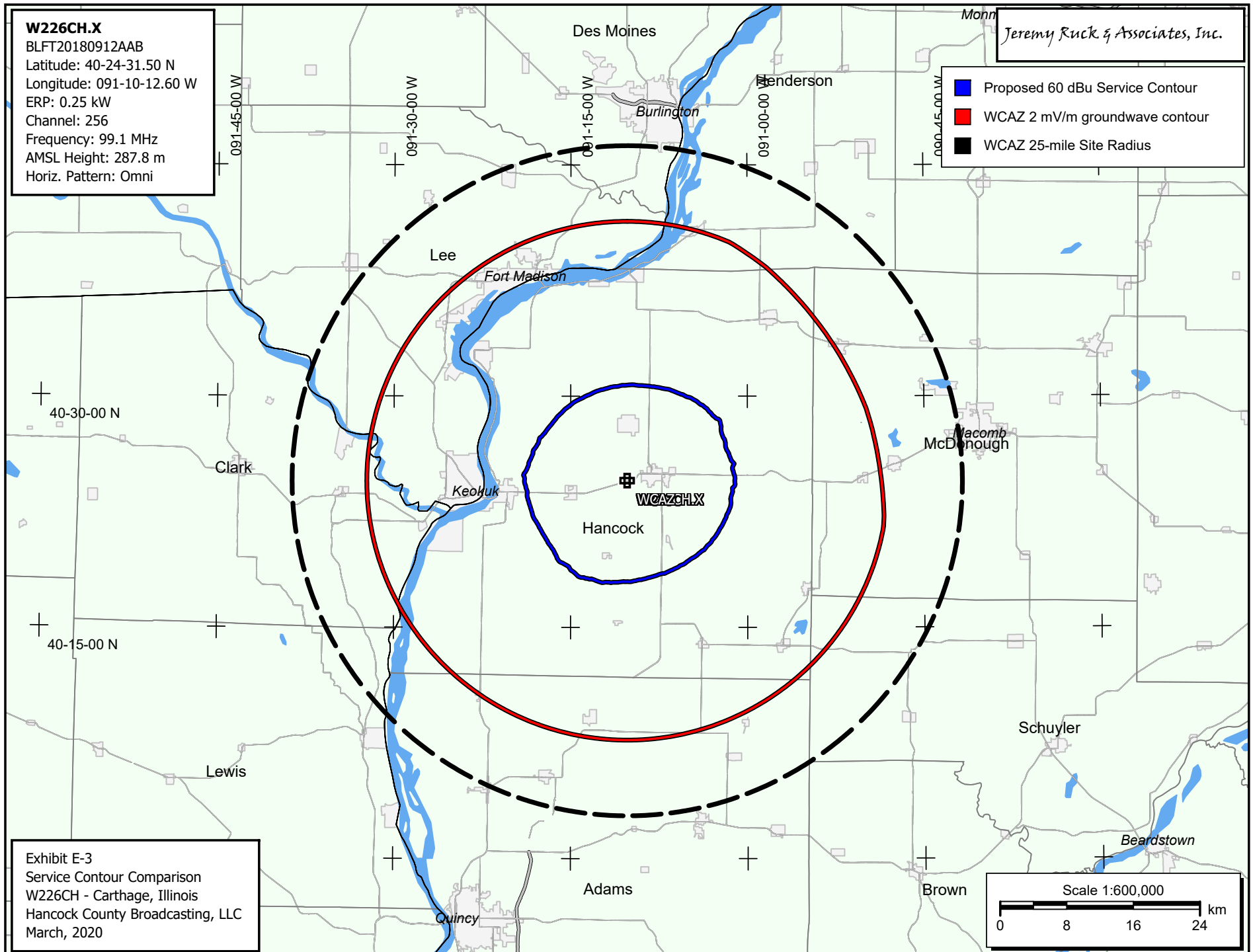
Frequency: 99.1 MHz

AMSL Height: 287.8 m

Horiz. Pattern: Omni

*Jeremy Ruck & Associates, Inc.*

- Proposed 60 dBu Service Contour
- WCAZ 2 mV/m groundwave contour
- WCAZ 25-mile Site Radius

**Exhibit E-3**

Service Contour Comparison

W226CH - Carthage, Illinois

Hancock County Broadcasting, LLC

March, 2020



Jeremy Ruck & Associates, Inc.  
Consulting Engineers

Exhibit E-4 - Tabular Interference Study  
W226CH - Carthage, Illinois  
CH# 256D - 99.1 MHz, Pwr= 0.25 kW DA, HAAT= 89.2 M, COR= 287.8 M  
Average Protected F(50-50)= 12.18 km  
Standard Directional

REFERENCE  
40 24 31.50 N.  
91 10 12.60 W.

DISPLAY DATES  
DATA 03-18-20  
SEARCH 03-18-20

CH CITY	CALL	TYPE STATE	ANT AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
258C1 Quincy	WCOY	LIC N__ IL	214.3 34.0	62.72 BLH20021125AAV	39 56 30.20 91 35 03.60	100.000 149	7.4 316	59.4 Staradio Corp.	47.2	2.6
253A Augusta	WLSB	LIC ____ IL	136.6 316.8	27.20 BLED20150918ACP	40 13 50.10 90 57 00.40	0.100 22	0.7 216	5.6 Lifestyle Education Academ	14.3	20.5
255D Quincy	W255CY	LIC ____ IL	195.1 15.0	52.68 BLFT20160915AAY	39 57 04.20 91 19 53.50	0.250	24.3 373	16.4 wgem License, LLC	18.7	24.5
257D Burlington	K257GC	LIC ____ IA	5.6 185.6	45.91 BLFT20161013AAY	40 49 11.10 91 07 02.50	0.250 99	17.8 266	12.2 Pritchard Broadcasting Cor	23.0	27.2
255B Rock Island	WLKU	LIC ____ IL	32.8 213.3	121.87 BMLED20110329ADS	41 19 39.10 90 22 46.50	39.000 281	89.9 501	75.3 Educational Media Foundati	26.8	40.1
256C2 Brooklyn	KSKB	LIC ____ IA	325.4 144.6	173.82 BLED20070328AAA	41 41 23.00 92 21 31.70	44.000 160	137.2 427	53.2 Florida Public Radio, Inc.	30.9	101.3
202A Macomb	WIUS	LIC ____ IL	81.1 261.4	41.57 BLED20180523AAR	40 27 56.00 90 41 09.20	0.220 34	0.0 239	0.0 Western Illinois Universit	9.5R	32.1M
256C0 Clayton	KLJY	LIC N__ MO	160.2 340.7	216.43 BLH20111116AHE	38 34 27.90 90 19 31.90	100.000 309	171.0 462	71.4 Gateway Creative Broadcast	33.8	105.0
203B Quincy	WGCA-FM	LIC ____ IL	195.5 15.4	50.36 BLED19870930KA	39 58 18.10 91 19 42.50	40.000 137	0.0 325	0.0 Great Commission Broadcast	14.5R	35.9M

Terrain database is FCC 30 meter , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM  
In & Out distances between contours are shown at closest points. Reference zone= East Zone, Co to 3rd adjacent.  
All separation margins (if shown) include rounding.  
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)  
« = Station meets FCC minimum distance spacing for its class.  
Reference station has protected zone issue: AM tower

**W226CH.X**

BLFT20180912AAB

Latitude: 40-24-31.50 N

Longitude: 091-10-12.60 W

ERP: 0.25 kW

Channel: 256

Frequency: 99.1 MHz

AMSL Height: 287.8 m

Horiz. Pattern: Omni

*Jeremy Ruck & Associates, Inc.*

- 60 dBu F(50,50) Service Contour
- 54 dBu F(50,50) Service Contour
- 40 dBu F(50,10) Interference Contour
- 48 dBu F(50,10) Interference Contour
- 54 dBu F(50,10) Interference Contour
- 100 dBu F(50,10) Interference Contour

