# *COMPREHENSIVE TECHNICAL EXHIBIT*
# *APPLICATION FOR CONSTRUCTION PERMIT*

---

## PROPOSED NEW NCE FM STATION
## WEST PLAINS, MISSOURI
## 91.1 MHZ / CHANNEL 216C3

# COMMUNITY BROADCASTING, INC.

NOVEMBER 2021



JEREMY RUCK & ASSOCIATES, INC.
P.O. Box 415
Canton, IL 61520
Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

# *APPLICATION FOR CONSTRUCTION PERMIT*

The following engineering statement and attached exhibits have been prepared for **Community Broadcasting, Inc.** ("CBI"), applicant for a new non-commercial educational FM station to serve West Plains, Missouri, and are in support of their application for construction permit for that facility.

The proposed facility would operate on FM channel 216 as a class C3 facility. It is proposed that the facility operate with a maximum effective radiated power of 14.5 kW at a center of radiation of 367.3 meters above mean sea level, 76.2 meters above ground level, utilizing a non-directional antenna. The antenna elevation above mean sea level corresponds to a center of radiation elevation of 99.9 meters above average terrain. The Commission's 30-meter terrain database was utilized to determine average terrain for the proposed facility, and for the generation of contours depicted within this technical exhibit.

The proposed technical parameters comply with the provisions of Section 73.515 of the Commission's Rules. Exhibit E-1 illustrates the predicted 60 dBu service contour for the proposed technical parameters. As this map demonstrates, the entire community of license, West Plains, Missouri, is located within the predicted 60 dBu service contour.

The proposed new facility would comply with the provisions of Section 73.1125 of the Commission's Rules. Residents of the region, including those within the community of license, West Plains Missouri, will be provided with toll-free telephone access to the main studio.

The proposed technical parameters for the new facility under this application comply with the interference protection requirements of Sections 73.207, 73.509, and 73.525 of the Commission's Rules. Sections 73.213 and 73.215 are not applicable.

Exhibit E-2 is a tabular interference/contour overlap study pursuant to Section 73.509 for the proposed technical parameters. This tabular study is graphically depicted in the contour maps in Exhibits E-3 and E-4. Exhibit E-3 is a graphical overview of the allocation situation, with Exhibit E-4 illustrating detail in the vicinity of the closest approach of the proposed 60 dBu service contour with the KSMU 40 dBu F(50,10) contour.[1] A tabulation of the proposed 60 dBu F(50,50) and KSMU 40 dBu F(50,10) contours across pertinent arcs of interest are in Exhibits E-5 and E-6

The proposed technical parameters comply with the intermediate frequency spacing provisions of Section 73.207 of the Commission's Rules. Exhibit E-7 is a single channel spacing study for the proposed facility. This study demonstrates that there are no spacing conflicts to proposed or authorized facilities on FM channels 269 or 270. This single channel spacing study also demonstrates that there are no television channel six broadcast facilities located within the affected distance of 177 kilometers under Section 73.525 of the Commission's Rules.

The proposed facility would comply with relevant international agreements. Exhibit E-8 illustrates the proposed site location, as well as a 320-kilometer radius centered on the site. As this map demonstrates, the proposed site is located well in excess of this distance from either the Canadian or Mexican border.

[1] The Facility ID for KSMU at Springfield, Missouri is 4210.

The map in Exhibit E-9 illustrates the proposed 60 dBu service contour along with other NCE 60 dBu service contours that intersect or overlap the proposed service contour. All contours depicted, other than the proposed 60 dBu service contour, are from licensed facilities, and all are for stations operating on channels below 221. Each contour depicted is based on licensed technical parameters, except for the KDMC contour. That contour is based on the pending license application under LMS File No. 0000156955. The proposed 60 dBu service contour has a resident population of 42,967 persons within an area of 3,746 square kilometers.

As this map demonstrates, the proposed technical parameters would result in large areas of first and second local NCE service. The area of first local NCE service that would be provided by the proposed facility encompasses 2,692 square kilometers with a resident population of 18,384 persons. The first local service area population is 42.8 percent of the 60 dBu contour total, and land area is 71.9 percent of the total within the 60 dBu contour.

The second local service area consists of four separate regions with a total area of 896 square kilometers. The total population within these four regions is 22,898 persons, which is 53.3 percent of the total within the proposed 60 dBu service contour. In the aggregate, the total first and second local NCE service population provided by the proposed technical parameters is 41,272 persons, or 96.1 percent of the total within the 60 dBu service contour.

CBI is the licensee of FM translator station K241BY at West Plains, Missouri, and KWCV at Walnut Ridge, Arkansas.[2] The map in Exhibit E-10 illustrates the predicted 70 dBu service contour for each of these facilities. As is demonstrated on this map, there is no contour overlap between KWCV and the proposed facility, but an area of overlap between the proposed 70 dBu service contour and the K241BY 70 dBu contour exists. CBI will divest itself of the license for K241BY upon operation under program test authority for the proposed facility described in this application.

CBI has obtained reasonable site assurance for use of the proposed site. Attached to this technical exhibit is correspondence from American Tower Corporation stating that CBI may claim reasonable site assurance for any ATC site used in applications filed.

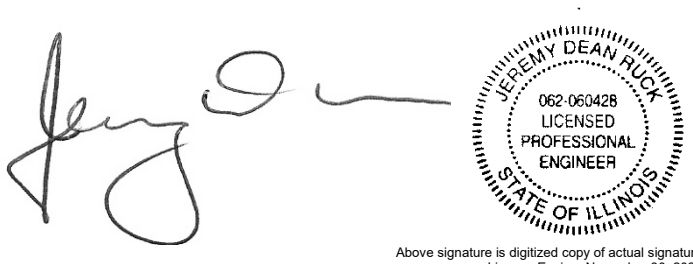
The proposed facility would not constitute a significant environmental impact, and is exempt from environmental processing. The proposed facility would utilize a tower that is registered with the Commission. The addition of the antenna to this structure would not increase its existing environmental impact.

Additionally, the proposed facility would not constitute a radiofrequency radiation exposure hazard to persons in the vicinity of the structure. It is proposed that a type-3 antenna with four elements spaced 1.0 wavelength apart be utilized. *FM Model* calculates a maximum power density of 15.3 $\mu W/cm^2$ at a distance of 30 meters from the tower base. CBI certifies that it will coordinate with all other users of the site to ensure that workers and other persons are not exposed to levels

[2] The Facility ID for K241BY at West Plains, Missouri is 140390. The Facility ID for KWCV at Walnut Ridge, Arkansas is 175725.

of radiofrequency radiation in excess of the Commission's safety standards. Coordination activities will include, but are not necessarily limited to, a reduction in transmitter power or cessation of operation.

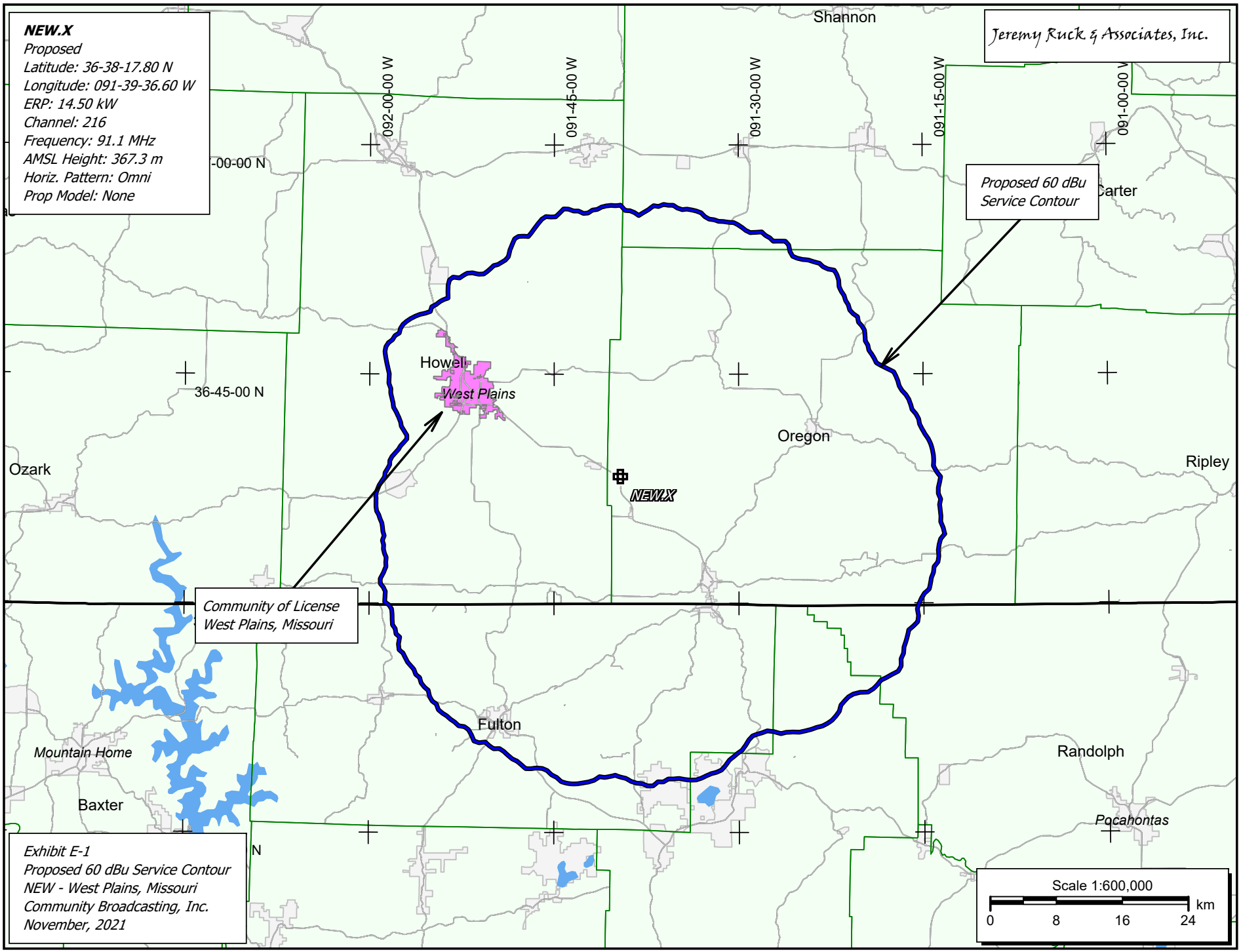
The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.




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

Jeremy D. Ruck, PE
November 4, 2021

JEREMY RUCK & ASSOCIATES, INC.
P.O. Box 415
Canton, IL 61520
Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com


NEW.X
Proposed
Latitude: 36-38-17.80 N
Longitude: 091-39-36.60 W
ERP: 14.50 kW
Channel: 216
Frequency: 91.1 MHz
AMSL Height: 367.3 m
Horiz. Pattern: Omni
Prop Model: None
Jeremy Ruck & Associates, Inc.
Shannon
092-00-00 W
091-45-00 W
091-30-00 W
091-15-00 W
091-00-00 W
-00-00 N
36-45-00 N
Proposed 60 dBu
Service Contour
Carter
Howell
West Plains
Oregon
Ripley
Ozark
NEW.X
Community of License
West Plains, Missouri
Fulton
Mountain Home
Baxter
Randolph
Pocahontas
N
Exhibit E-1
Proposed 60 dBu Service Contour
NEW - West Plains, Missouri
Community Broadcasting, Inc.
November, 2021
Scale 1:600,000
km
0
8
16
24

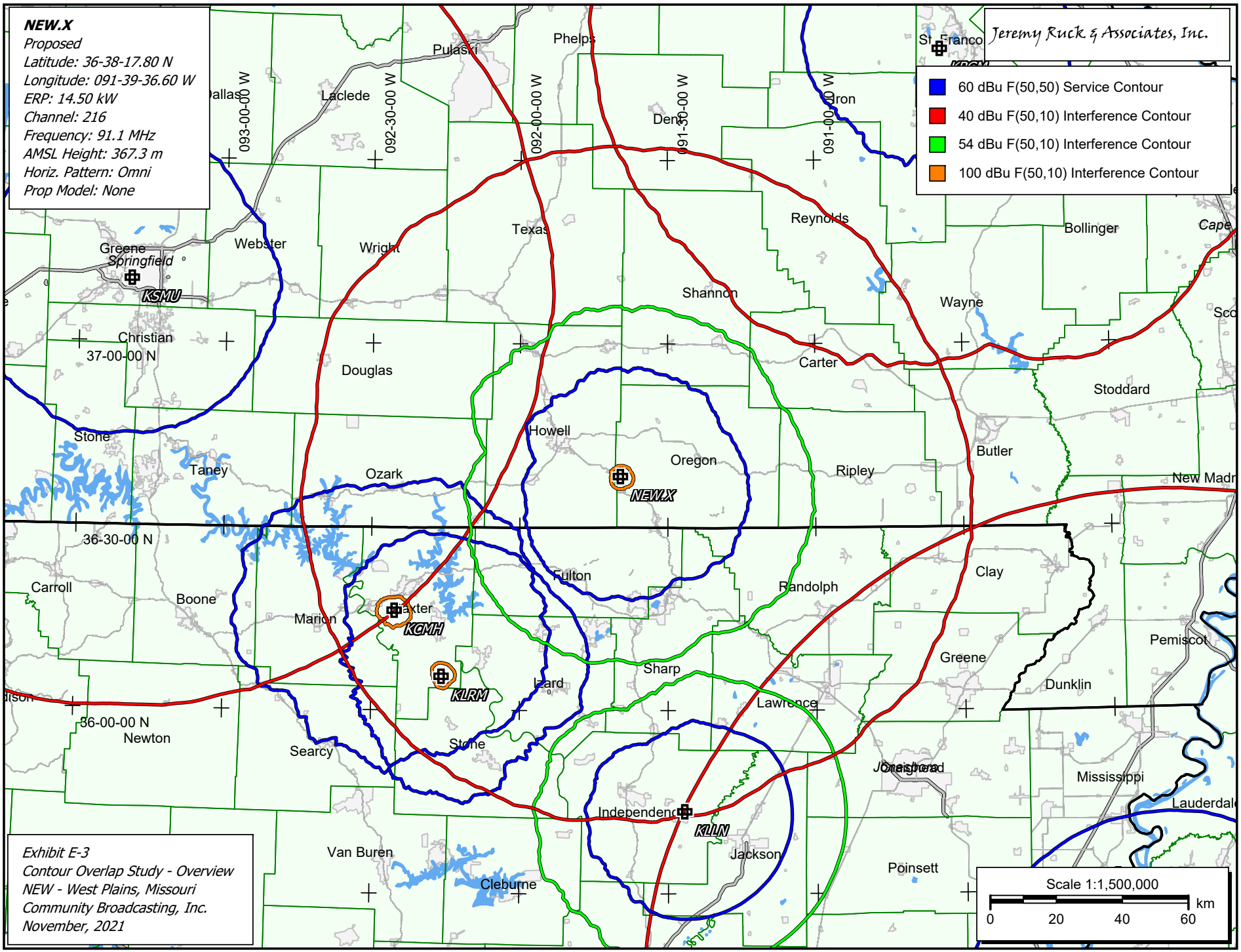
Jeremy Ruck & Associates, Inc.
Consulting Engineers

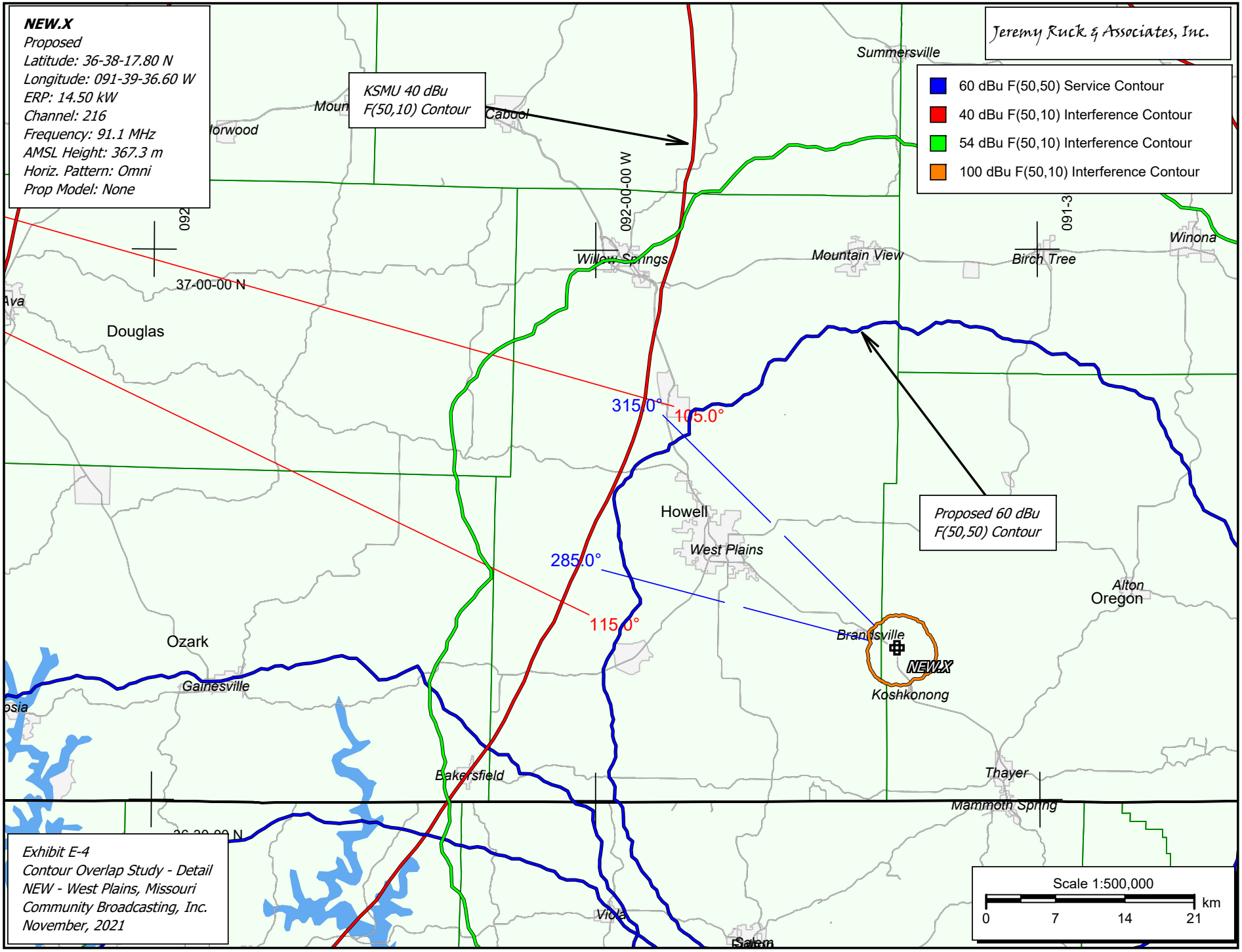
Exhibit E-2 - Tabular Interference Study
NEW - West Plains, Missouri

REFERENCE CH# 216C3 - 91.1 MHz, Pwr= 14.5 kW, HAAT= 99.9 M, COR= 367.3 M DISPLAY DATES
36 38 17.80 N. Average Protected F(50-50)= 34.76 km DATA 11-03-21
91 39 36.60 W. Omni-directional SEARCH 11-04-21

| CH CALL / CITY | TYPE ANT / STATE | AZI / <-- | DIST / FILE # | LAT / LNG | PWR(kW) / HAAT(M) | INT(km) / COR(M) | PRO(km) / LICENSEE | *IN* (Overlap in km) | *OUT* |
|---|---|---|---|---|---|---|---|---|---|
| 216C2 KSMU | LIC _CN | 292.3 | 159.29 | 37 10 14.10 | 40.000 | 127.0 | 44.1 | 0.1 | 16.6 |
| Springfield | MO | 111.3 | BLED19930610KC | 93 19 25.60 | 125 | 503 | Board Of Governors Of Miss | | |
| 215C3 KLLN | LIC _CN | 169.2 | 103.51 | 35 43 25.20 | 4.000 | 39.2 | 25.1 | 26.6 | 20.0 |
| Newark | AR | 349.3 | BLED19860116KD | 91 26 40.40 | 139 | 236 | Cedar Ridge School Distric | | |
| 216C2 KBGM | LIC _CN | 36.6 | 161.64 | 37 48 04.10 | 8.000 | 100.2 | 37.1 | 26.1 | 23.2 |
| Park Hills | MO | 217.2 | BLED20010524AAE | 90 33 51.40 | 189 | 479 | American Family Associatio | | |
| 218C2 KCMH | LIC _VN | 239.3 | 79.42 | 36 16 17.20 | 26.000 | 4.5 | 44.1 | 41.4 | 31.4 |
| Mountain Home | AR | 58.9 | BLED20000911AAQ | 92 25 20.50 | 144 | 354 | Christian Broadcasting Gro | | |
| 216C1 WKNO-FM | LIC _CN | 134.4 | 233.74 | 35 09 14.30 | 100.000 | 159.6 | 62.1 | 33.7 | 65.1 |
| Memphis | TN | 315.4 | BLED20010418AAF | 89 49 19.30 | 175 | 268 | Mid-South Public Communica | | |
| 214C3 KLRM | LIC DVN | 221.8 | 81.24 | 36 05 31.30 | 7.000 | 4.1 | 42.3 | 41.5 | 35.2 |
| Melbourne | AR | 41.4 | BLED20080505AEG | 92 15 46.60 | 188 | 421 | Educational Media Foundati | | |
| 06 -- NEW« | CP __N | 355.8 | 147.90 | 37 57 53.70 | 0.300 | 14.0 | 15.5 | 29.5R | 118.4M |
| Rolla | MO | 175.7 | BNPDVL-20090825BJS | 91 47 01.89 | | 470 | | | |

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= - Zone 2, 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.


NEW.X
Proposed
Latitude: 36-38-17.80 N
Longitude: 091-39-36.60 W
ERP: 14.50 kW
Channel: 216
Frequency: 91.1 MHz
AMSL Height: 367.3 m
Horiz. Pattern: Omni
Prop Model: None
Jeremy Ruck & Associates, Inc.
60 dBu F(50,50) Service Contour
40 dBu F(50,10) Interference Contour
54 dBu F(50,10) Interference Contour
100 dBu F(50,10) Interference Contour
093-00-00 W
092-30-00 W
092-00-00 W
091-30-00 W
091-00-00 W
37-00-00 N
36-30-00 N
36-00-00 N
Springfield
KSMU
NEWJX
KCMH
KLRM
KLLN
Pulaski
Laclede
Phelps
Dent
Iron
Reynolds
Bollinger
Webster
Wright
Texas
Shannon
Wayne
Carter
Stoddard
Butler
Ripley
Oregon
Howell
Douglas
Ozark
Taney
Stone
Christian
Greene
Carroll
Boone
Marion
Baxter
Fulton
Randolph
Clay
Pemiscot
Dunklin
Sharp
Izard
Lawrence
Greene
Searcy
Newton
Van Buren
Cleburne
Independence
Jackson
Poinsett
Mississippi
Scale 1:1,500,000
0 20 40 60 km
Exhibit E-3
Contour Overlap Study - Overview
NEW - West Plains, Missouri
Community Broadcasting, Inc.
November, 2021


NEW.X
Proposed
Latitude: 36-38-17.80 N
Longitude: 091-39-36.60 W
ERP: 14.50 kW
Channel: 216
Frequency: 91.1 MHz
AMSL Height: 367.3 m
Horiz. Pattern: Omni
Prop Model: None
Jeremy Ruck & Associates, Inc.
60 dBu F(50,50) Service Contour
40 dBu F(50,10) Interference Contour
54 dBu F(50,10) Interference Contour
100 dBu F(50,10) Interference Contour
KSMU 40 dBu F(50,10) Contour
Proposed 60 dBu F(50,50) Contour
315.0°
105.0°
285.0°
115.0°
092-00-00 W
091-3
37-00-00 N
Summersville
Cabool
Willow Springs
Mountain View
Birch Tree
Winona
Douglas
Howell
West Plains
Alton
Oregon
Ozark
Gainesville
Brandsville
NEW.X
Koshkonong
Bakersfield
Thayer
Mammoth Spring
Viola
Salem
Exhibit E-4
Contour Overlap Study - Detail
NEW - West Plains, Missouri
Community Broadcasting, Inc.
November, 2021
Scale 1:500,000
km
0
7
14
21

# Exhibit E-5 – Proposed 60 dBu F(50,50) Contour Tabulation

Distance to Contour Report

Type of contour: FCC
Location Variability: 50.0 %
Time Variability: 50.0 %
# of Radials Calculated: 360
FCC Matching HAAT Calculation Used
Field Strength: 60.00 dBuV/m

Primary Terrain: FCC 30 Meter Terrain
Secondary Terrain: NED 3 Second US Terrain

---

Transmitter Information:

Call Letters: NEW.X
File Number: Proposed
Latitude: 36-38-17.80 N
Longitude: 091-39-36.60 W
ERP: 14.50 kW
EIRP: 23.78 kW
Channel: 216
Frequency: 91.1 MHz
AMSL Height: 367.3 m
HAAT: 99.94 m
Horiz. Antenna Pattern: Omni
Vert. Elevation Pattern: No

---

| Azimuth (deg) | Distance (km) | HAAT (m) |
|---|---|---|
| 285.0 | 27.80 | 62.1 |
| 286.0 | 28.21 | 64.4 |
| 287.0 | 28.72 | 67.1 |
| 288.0 | 28.95 | 68.4 |
| 289.0 | 29.27 | 70.1 |
| 290.0 | 29.60 | 71.9 |
| 291.0 | 29.78 | 72.8 |
| 292.0 | 30.25 | 75.3 |
| 293.0 | 30.44 | 76.4 |
| 294.0 | 30.64 | 77.4 |
| 295.0 | 31.05 | 79.6 |
| 296.0 | 31.48 | 81.8 |
| 297.0 | 31.90 | 84.0 |
| 298.0 | 32.29 | 86.1 |
| 299.0 | 32.47 | 87.0 |
| 300.0 | 32.44 | 86.8 |
| 301.0 | 32.19 | 85.6 |
| 302.0 | 32.20 | 85.6 |
| 303.0 | 31.93 | 84.2 |
| 304.0 | 32.13 | 85.2 |
| 305.0 | 32.14 | 85.3 |
| 306.0 | 32.00 | 84.6 |
| 307.0 | 31.80 | 83.5 |
| 308.0 | 31.53 | 82.1 |
| 309.0 | 31.22 | 80.5 |
| 310.0 | 30.80 | 78.2 |
| 311.0 | 30.49 | 76.6 |
| 312.0 | 30.75 | 78.0 |
| 313.0 | 30.54 | 76.9 |
| 314.0 | 30.46 | 76.5 |
| 315.0 | 30.31 | 75.7 |

# Exhibit E-6 – KSMU 40 dBu F(50,10) Contour Tabulation

Distance to Contour Report

Type of contour:  FCC
Location Variability: 50.0 %
Time Variability: 10.0 %
# of Radials Calculated: 360
FCC Matching HAAT Calculation Used
Field Strength: 40.00 dBuV/m

Primary Terrain: FCC 30 Meter Terrain
Secondary Terrain: NED 3 Second US Terrain

---

Transmitter Information:

Call Letters: KSMU
File Number: BLED19930610KC
Latitude: 37-10-14.10 N
Longitude: 093-19-25.60 W
ERP: 40.00 kW
EIRP: 65.60 kW
Channel: 216
Frequency: 91.1 MHz
AMSL Height: 503.0 m
HAAT: 125.0 m
Horiz. Antenna Pattern: Omni
Vert. Elevation Pattern: No

---

| Azimuth (deg) | Distance (km) | HAAT (m) |
|---|---|---|
| 105.0 | 127.35 | 112.0 |
| 106.0 | 127.44 | 112.6 |
| 107.0 | 127.41 | 112.4 |
| 108.0 | 127.31 | 111.8 |
| 109.0 | 127.13 | 110.6 |
| 110.0 | 126.95 | 109.5 |
| 111.0 | 126.64 | 107.7 |
| 112.0 | 126.62 | 107.6 |
| 113.0 | 126.79 | 108.6 |
| 114.0 | 126.72 | 108.2 |
| 115.0 | 126.83 | 108.8 |

Jeremy Ruck & Associates, Inc.
Consulting Engineers
Exhibit E-7 - Single Channel Spacing Study
NEW - West Plains, Missouri

REFERENCE
36 38 17.80 N.
91 39 36.60 W.

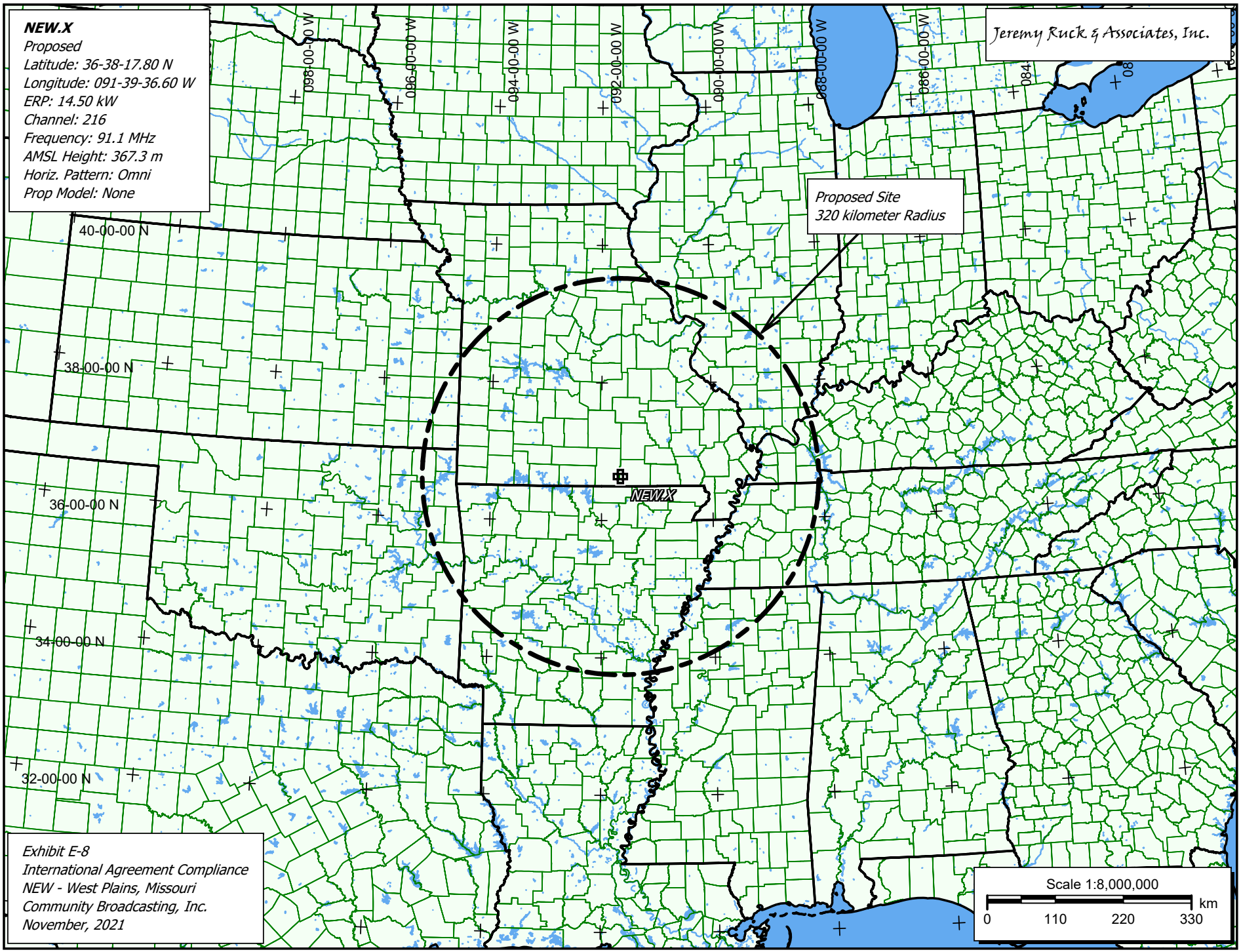
CLASS = C3
Current Spacings to 3rd Adj.

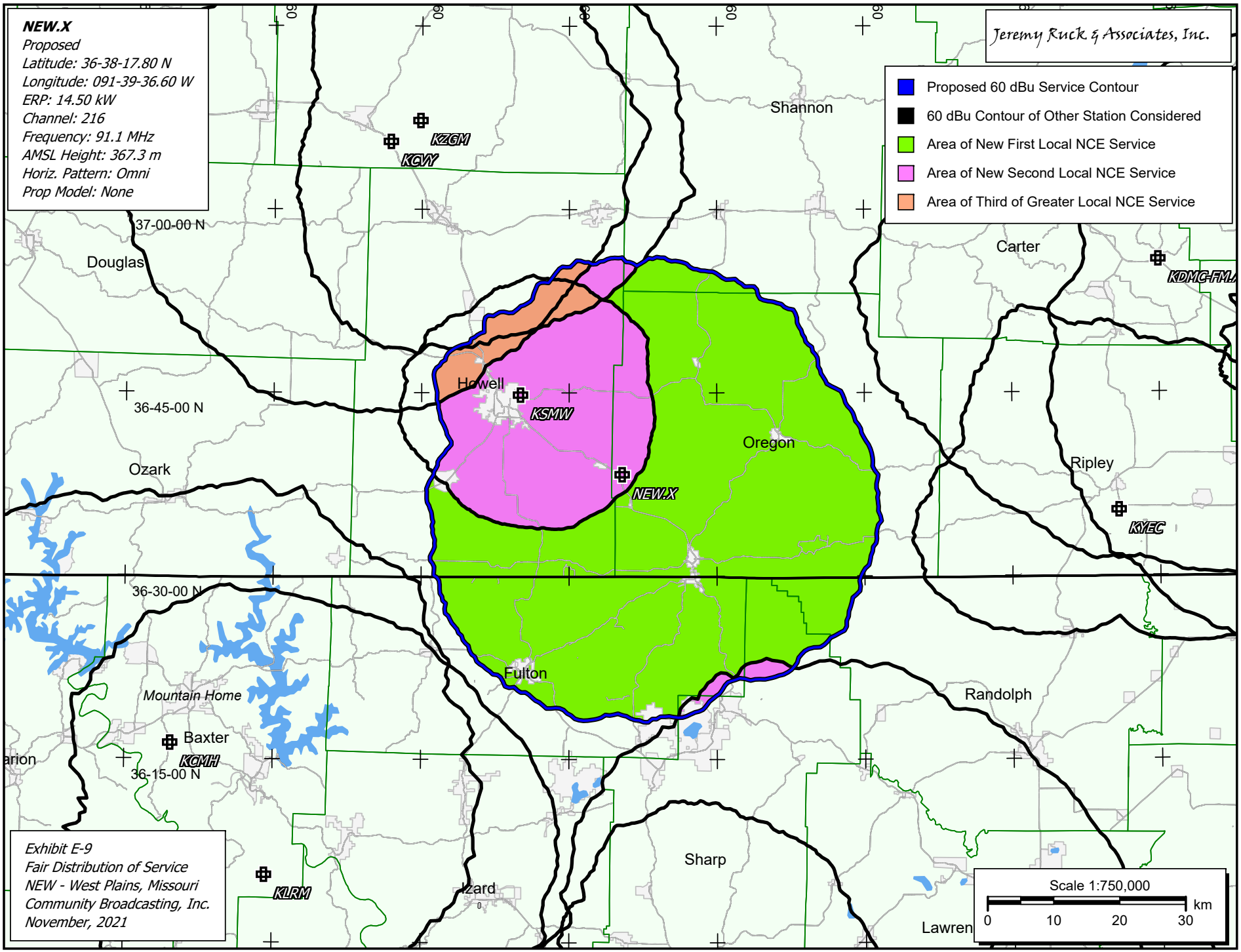
DISPLAY DATES
DATA 11-03-21
SEARCH 11-04-21

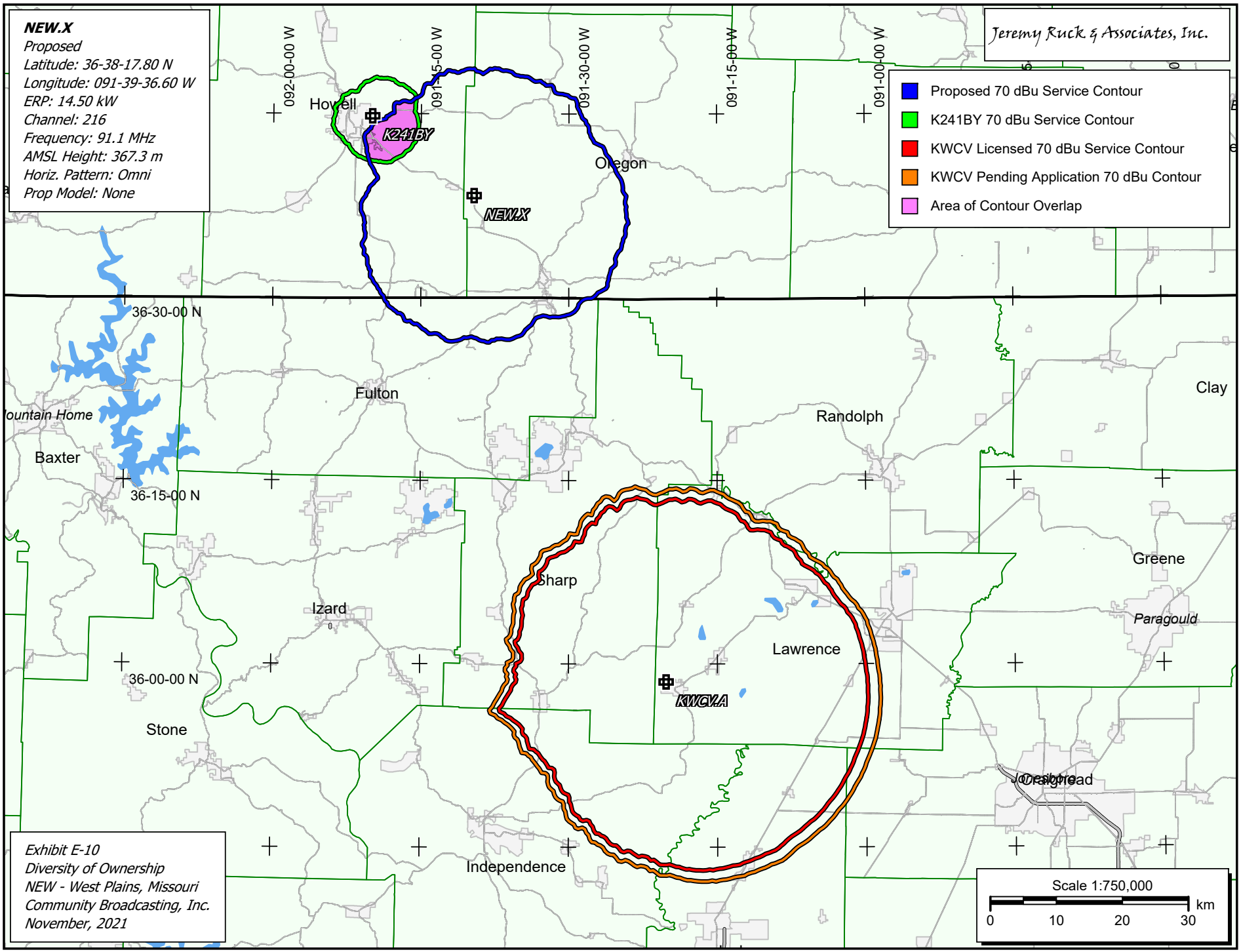
Channel 216 - 91.1 MHz

| Call | Channel | | Location | | Azi | Dist | FCC | Margin |
|---|---|---|---|---|---|---|---|---|
| NEW | CP | 06 -- | Rolla | MO | 355.8 | 147.63 | 176.5 | -28.9 |
| KSMU | LIC | 216C2 | Springfield | MO | 292.3 | 159.60 | 176.5 | -16.9 |
| KBGM | LIC | 216C2 | Park Hills | MO | 36.6 | 161.60 | 176.5 | -14.9 |
| KLLN | LIC | 215C3 | Newark | AR | 169.2 | 103.32 | 98.5 | 4.8 |
| WKNO-FM | LIC | 216C1 | Memphis | TN | 134.4 | 233.80 | 210.5 | 23.3 |
| KCMH | LIC | 218C2 | Mountain Home | AR | 239.3 | 79.53 | 55.5 | 24.0 |
| KLRM | LIC-D | 214C3 | Melbourne | AR | 221.8 | 81.24 | 42.5 | 38.7 |
| WPGF-LP | STA | 06+-- | Memphis | TN | 133.2 | 229.78 | 176.5 | 53.3 |
| WPGF-LP | LI | 06+-- | Memphis | TN | 133.2 | 229.78 | 176.5 | 53.3 |

All separation margins include rounding


NEW.X
Proposed
Latitude: 36-38-17.80 N
Longitude: 091-39-36.60 W
ERP: 14.50 kW
Channel: 216
Frequency: 91.1 MHz
AMSL Height: 367.3 m
Horiz. Pattern: Omni
Prop Model: None
Jeremy Ruck & Associates, Inc.
Proposed Site
320 kilometer Radius
NEW.X
40-00-00 N
38-00-00 N
36-00-00 N
34-00-00 N
32-00-00 N
098-00-00 W
096-00-00 W
094-00-00 W
092-00-00 W
090-00-00 W
088-00-00 W
086-00-00 W
Exhibit E-8
International Agreement Compliance
NEW - West Plains, Missouri
Community Broadcasting, Inc.
November, 2021
Scale 1:8,000,000
0
110
220
330
km


NEW.X
Proposed
Latitude: 36-38-17.80 N
Longitude: 091-39-36.60 W
ERP: 14.50 kW
Channel: 216
Frequency: 91.1 MHz
AMSL Height: 367.3 m
Horiz. Pattern: Omni
Prop Model: None
Jeremy Ruck & Associates, Inc.
Proposed 60 dBu Service Contour
60 dBu Contour of Other Station Considered
Area of New First Local NCE Service
Area of New Second Local NCE Service
Area of Third of Greater Local NCE Service
Shannon
KZGM
KCVY
37-00-00 N
Douglas
Carter
KDMC-FM
Howell
KSMW
36-45-00 N
Oregon
Ozark
Ripley
NEW.X
KYEC
36-30-00 N
Fulton
Mountain Home
Randolph
Baxter
KGMH
36-15-00 N
Sharp
KLRM
Izard
Lawren
Scale 1:750,000
0 10 20 30 km
Exhibit E-9
Fair Distribution of Service
NEW - West Plains, Missouri
Community Broadcasting, Inc.
November, 2021


NEW.X
Proposed
Latitude: 36-38-17.80 N
Longitude: 091-39-36.60 W
ERP: 14.50 kW
Channel: 216
Frequency: 91.1 MHz
AMSL Height: 367.3 m
Horiz. Pattern: Omni
Prop Model: None
Jeremy Ruck & Associates, Inc.
Proposed 70 dBu Service Contour
K241BY 70 dBu Service Contour
KWCV Licensed 70 dBu Service Contour
KWCV Pending Application 70 dBu Contour
Area of Contour Overlap
092-00-00 W
091-45-00 W
091-30-00 W
091-15-00 W
091-00-00 W
Howell
Oregon
K241BY
NEW.X
36-30-00 N
36-15-00 N
36-00-00 N
Fulton
Baxter
Clay
Randolph
Greene
Sharp
Izard
Lawrence
Paragould
KWCV.A
Stone
Independence
Jonesboro
Craighead
Exhibit E-10
Diversity of Ownership
NEW - West Plains, Missouri
Community Broadcasting, Inc.
November, 2021
Scale 1:750,000
0
10
20
30
km

October 22, 2021
Allan Brace
Corporate Dir. Of Engineering
Community Broadcasting Inc.
10550 Barkley Street
Suite 100
Overland Park, KS  66212

Re:  American Tower Sites – Letter of Assurance

Dear Mr. Brace,

American Tower Corporation, owner of the above referenced tower, hereby grants Community Broadcasting Inc., permission to represent in any applications filed with the Federal Communications Commission ("FCC") that the company has reasonable assurance from American Tower that it will enter into good faith lease negotiations for tower and transmission equipment space on marketable towers. Final consideration shall be contingent upon submitting a completed site application, receiving credit approval from American Tower and conducting a full structural analysis and shared interference study.

Once you receive a valid construction permit, please contact Tiffany Yu, Broadcast Business Development Manager at tiffany.yu@americantower.com or (781) 926-7820 to submit an application and receive a lease quote. We look forward to working with you on the build out of your station(s).

Thank you for your interest in American Tower.

Regards,

*Tiffany Yu*

**Tiffany Yu**
*Broadcast Business Development Manager*
American Tower Corporation
10 Presidential Way
Woburn, MA 01801
781-926-7820 office
603-930-9091 mobile
tiffany.yu@americantower.com