

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

PROPOSED NEW NCE FM STATION
SEDALIA, MISSOURI
88.3 MHz / CHANNEL 202C3

COMMUNITY BROADCASTING, INC.

NOVEMBER 2021

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JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
Canton, IL 61520

Tel: 309.647.1200
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11.2.2021

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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 Sedalia, Missouri, and are in support of their application for construction permit for that facility.

The proposed facility would operate on FM channel 202 as a class C3 facility. It is proposed that the facility operate with a maximum effective radiated power of 13.0 kW at a center of radiation of 333.5 meters above mean sea level, 69.2 meters above ground level, utilizing a directional antenna. The antenna elevation above mean sea level corresponds to a center of radiation elevation of 84.3 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, Sedalia, 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 the community of license, Sedalia, Missouri, will be provided with toll-free telephone access to the main studio.

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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 the tabular interference 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 providing detail in the vicinity of the closest contour approach with KJNW at Kansas City, Missouri. A tabulation of the proposed 60 dBu F(50,50) and KJNW 54 dBu F(50,10) contours across the arcs of interest is provided in Exhibit 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 255 and 256. This single channel spacing study also demonstrates that there are no television channel six broadcast facilities located within the affected distance under Section 73.525 of 257 kilometers.

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.

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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.

As this map demonstrates, the proposed technical parameters would result in areas of new first and second local NCE service. The proposed 60 dBu service contour has a resident population of 84,244 persons by the 2010 US Census. The area where the proposed technical parameters would result in a new first local NCE service has a resident population of 40,334 persons by the 2010 US Census. This is 47.9 percent of the total resident population within the 60 dBu service contour. The area of new second local NCE service has a resident population of 4,307 persons. The aggregate of the new first and second local NCE service is 44,641 persons, or 53.0 percent of the total resident population within the 60 dBu service contour. The predicted 60 dBu service contour encompasses a land area of 2,792 square kilometers.

CBI is the licensee of FM translator stations K234CE at Sedalia, Missouri, and K245BO at Warrensburg, Missouri.¹ If CBI is granted a construction permit for the technical parameters proposed herein, the licenses for these two translators will be divested upon operation under program test authority. Exhibit E-10 illustrates the relationship between the 70 dBu service contour of the proposed facility, and these two translators. Although the principals of CBI have an

¹ The Facility ID for K234CE at Sedalia, Missouri is 138443. The Facility ID for K245BO at Warrensburg, Missouri is 138444.

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attributable interest in several other facilities in the region, none of these other facilities would have contour overlap with the proposed facility.

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 three elements spaced 1.0 wavelength apart be utilized. *FM Model* calculates a maximum power density of 20.2 $\mu\text{W}/\text{cm}^2$ at a distance of 34 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 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.

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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 2, 2021

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Canton, IL 61520

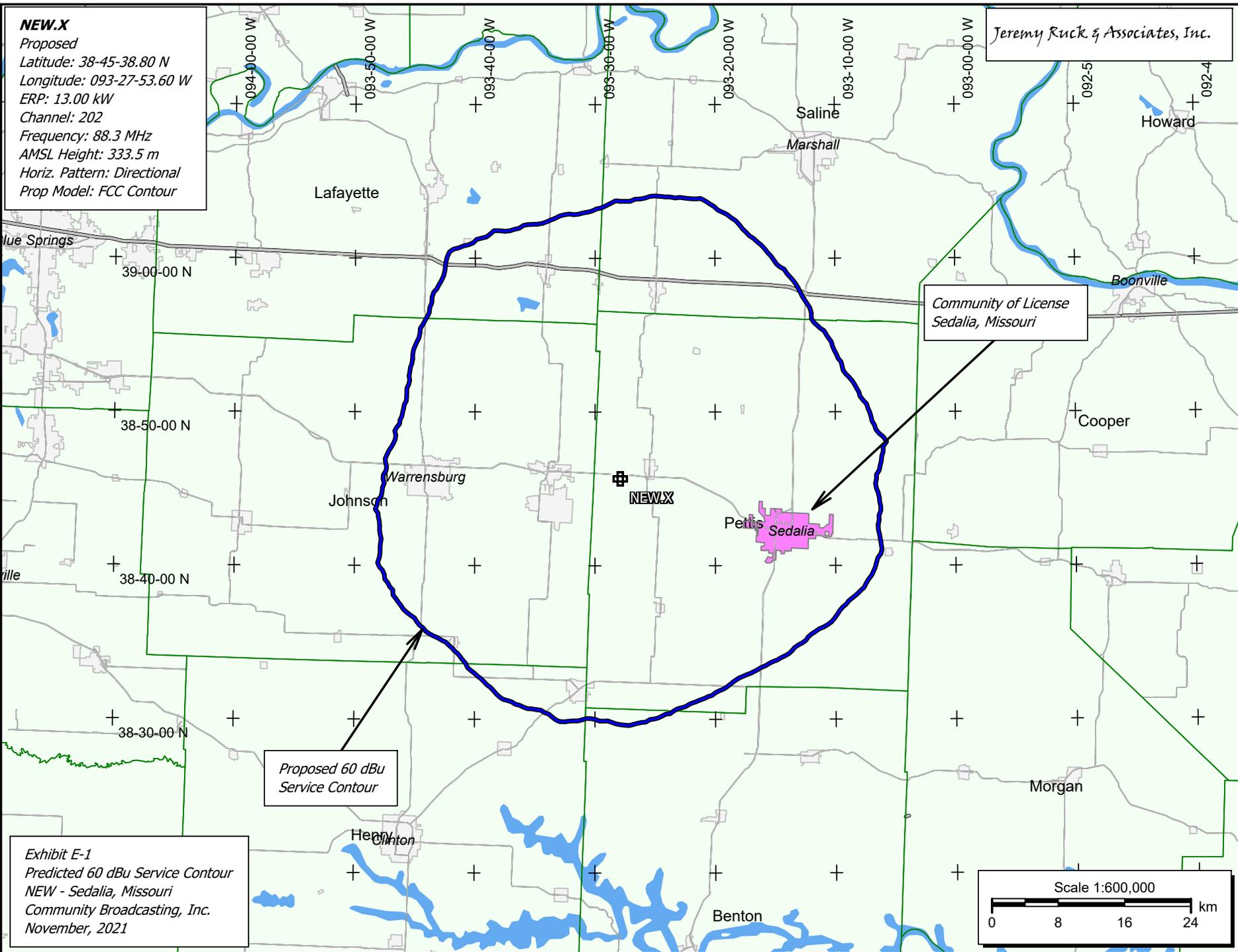
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11.2.2021

6

NEW.X
Proposed
Latitude: 38-45-38.80 N
Longitude: 093-27-53.60 W
ERP: 13.00 kW
Channel: 202
Frequency: 88.3 MHz
AMSL Height: 333.5 m
Horiz. Pattern: Directional
Prop Model: FCC Contour

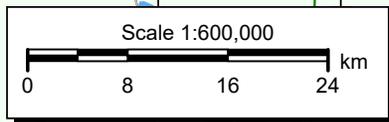
Jeremy Ruck & Associates, Inc.



Proposed 60 dBu Service Contour

Community of License Sedalia, Missouri

Exhibit E-1
Predicted 60 dBu Service Contour
NEW - Sedalia, Missouri
Community Broadcasting, Inc.
November, 2021



Jeremy Ruck & Associates, Inc.
Consulting Engineers

Exhibit E-2 - Tabular Interference Study

NEW - Sedalia, Missouri

REFERENCE
38 45 38.80 N.
93 27 53.60 W.

CH# 202C3 - 88.3 MHz, Pwr= 13 kw DA, HAAT= 85.4 M, COR= 333.5 M
Average Protected F(50-50)= 31.32 km
Standard Directional

DISPLAY DATES
DATA 10-30-21
SEARCH 10-30-21

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*
203C1 Kansas City	KJNW	LIC DCN MO		291.8 111.2	94.85 BLED19910315KA	39 04 24.00 94 29 06.80	100.000 227	66.7 491	45.0 University Of Northwestern	0.1	5.9
202C1 Springfield	KWND	LIC DEN MO		168.0 348.3	180.13 BLED20100104ABH	37 10 30.20 93 02 35.60	35.000 193	136.1 619	54.1 Radio Training Network, In	14.8	31.3
202C1 Mexico	KJAB-FM	LIC DCN MO		73.8 254.8	141.16 BLED20130522ADG	39 06 13.10 91 53 35.60	100.000 70	90.1 319	21.9 Mexico Educational Broadca	25.4	17.7
06 -- K06PT-D<< Columbia		APP DHN MO		74.3 255.0	106.70 0000163236	39 00 52.10 92 16 32.70	3.000	58.0 405	29.9	87.9R	18.9M
06 -- K06PT-D<< Columbia		CP ___N MO		78.3 259.1	99.84 BNPDVL-20091020AAM	38 56 12.10 92 20 02.59	0.300	58.3 236	8.7	67.0R	32.9M
201A Columbia	KCOU	LIC ___CN MO		78.3 259.0	101.00 BLED20100129ADO	38 56 24.10 92 19 16.60	0.430 44	19.4 265	12.7 The Curators Of The Univer	49.3	38.0
202C2 Bronson	KBJQ	LIC DCN KS		234.9 54.0	164.83 BMLLED20040507AAH	37 53 56.10 95 00 09.90	36.000 116	87.0 411	28.7 American Family Associatio	47.4	38.3
201A St. Thomas	KHJR	LIC DCN MO		101.5 282.3	111.87 BLED20110817AAN	38 33 09.40 92 12 15.10	2.500 89	21.2 291	13.7 Covenant Network	58.1	43.6
205C2 Adrian	KYLF	APP DCN MO		228.6 48.1	93.72 0000162532	38 12 03.80 94 16 12.40	37.500 138	4.9 391	44.8 Community Broadcasting, In	59.1	45.8
201A Chillicothe	KLWL	LIC ___CN MO		354.9 174.8	117.69 BLED20121017ABT	39 48 54.10 93 35 18.80	0.800 103	27.5 332	18.8 CSN International	56.9	47.4
205C2 Adrian	KYLF	LIC DCN MO		228.6 48.1	93.72 BLED20120501ACZ	38 12 03.80 94 16 12.40	30.000 138	4.6 390	42.9 Community Broadcasting, In	59.4	47.7
06 -- NEW<< Rolla		CP ___N MO		120.6 301.6	171.18 BNPDVL-20090825BJS	37 57 53.70 91 47 01.89	0.300	57.8 470	17.5	75.3R	95.9M

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= - 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: 38-45-38.80 N
 Longitude: 093-27-53.60 W
 ERP: 13.00 kW
 Channel: 202
 Frequency: 88.3 MHz
 AMSL Height: 333.5 m
 Horiz. Pattern: Directional
 Prop Model: FCC Contour

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

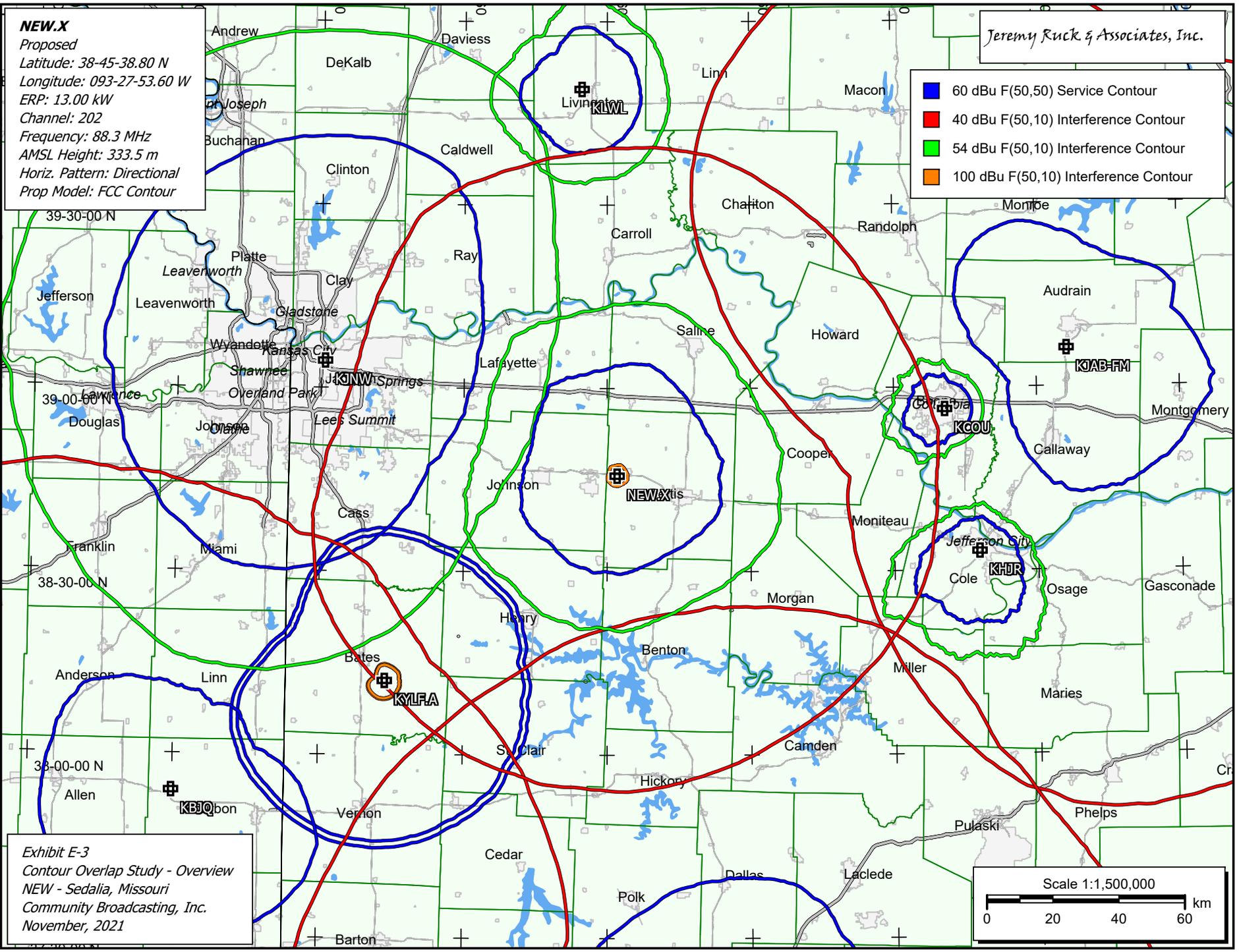


Exhibit E-3
 Contour Overlap Study - Overview
 NEW - Sedalia, Missouri
 Community Broadcasting, Inc.
 November, 2021

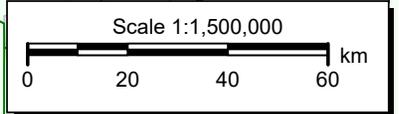


Exhibit E-5 – Proposed 60 dBu F(50,50) Contour Tabulation

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: 38-45-38.80 N
Longitude: 093-27-53.60 W
ERP: 13.00 kW
EIRP: 21.32 kW
Channel: 202
Frequency: 88.3 MHz
AMSL Height: 333.5 m
HAAT: 84.25 m
Horiz. Antenna Pattern: Directional
Vert. Elevation Pattern: No

Azimuth (deg)	Distance (km)	HAAT (m)
-----	-----	-----
270.0	28.60	87.6
271.0	28.57	88.6
272.0	28.26	87.9
273.0	28.21	88.9
274.0	28.37	91.3
275.0	28.44	93.2
276.0	28.27	93.4
277.0	28.10	93.8
278.0	27.85	93.5
279.0	27.68	93.8
280.0	27.54	94.3
281.0	27.58	95.0
282.0	27.80	97.0
283.0	27.67	96.5
284.0	27.42	95.1
285.0	27.49	96.0
286.0	27.40	95.8
287.0	27.44	96.4
288.0	27.47	97.1
289.0	27.54	98.0
290.0	27.46	97.9
291.0	27.59	98.4
292.0	27.77	99.3
293.0	27.96	100.3
294.0	27.93	99.7
295.0	28.02	99.9
296.0	28.33	101.9
297.0	28.48	102.6
298.0	28.66	103.5
299.0	28.72	103.6
300.0	28.91	104.6
301.0	29.19	105.0
302.0	29.38	104.7
303.0	29.48	103.8
304.0	29.56	102.7
305.0	29.63	101.6
306.0	29.86	101.6
307.0	30.18	102.4
308.0	30.21	101.0

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

309.0	30.30	100.2
310.0	30.38	99.3
311.0	30.52	98.8
312.0	30.89	99.9
313.0	31.08	99.7
314.0	31.54	101.3
315.0	31.82	101.7
316.0	31.83	100.4
317.0	32.03	100.3
318.0	32.20	100.1
319.0	32.45	100.3
320.0	32.88	101.7
321.0	33.44	104.4
322.0	33.92	106.6
323.0	34.23	107.8
324.0	34.21	106.8
325.0	33.97	104.4
326.0	33.83	102.7
327.0	33.62	100.6
328.0	33.50	99.0
329.0	33.65	99.2
330.0	33.48	97.4

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Exhibit E-6 – KJNW 54 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: 54.00 dBuV/m
Primary Terrain: FCC 30 Meter Terrain
Secondary Terrain: NED 3 Second US Terrain

Transmitter Information:

Call Letters: KJNW
File Number: BLED19910315KA
Latitude: 39-04-24 N
Longitude: 094-29-06.80 W
ERP: 100.00 kW
EIRP: 164.00 kW
Channel: 203
Frequency: 88.5 MHz
AMSL Height: 491.0 m
HAAT: 227.0 m
Horiz. Antenna Pattern: Directional
Vert. Elevation Pattern: No

Azimuth (deg)	Distance (km)	HAAT (m)
-----	-----	-----
90.0	67.94	225.3
91.0	67.85	225.8
92.0	67.65	225.3
93.0	67.65	226.6
94.0	67.57	227.2
95.0	67.23	225.5
96.0	66.96	224.4
97.0	66.97	225.9
98.0	66.85	226.1
99.0	66.91	228.1
100.0	66.86	229.0
101.0	66.42	225.0
102.0	65.87	220.1
103.0	65.68	218.4
104.0	65.64	218.1
105.0	65.73	218.8
106.0	65.91	220.4
107.0	65.91	220.4
108.0	65.99	221.2
109.0	66.17	222.7
110.0	66.61	226.8
111.0	66.62	226.8
112.0	66.26	223.5
113.0	66.00	221.2
114.0	65.89	220.2
115.0	65.91	220.4
116.0	65.99	221.2
117.0	66.09	222.1
118.0	66.10	222.1
119.0	65.99	221.2
120.0	65.92	220.5
121.0	65.81	218.2
122.0	65.71	216.0
123.0	65.64	214.0
124.0	65.52	211.7
125.0	65.59	211.0
126.0	65.90	212.5
127.0	66.10	212.9
128.0	66.35	213.8
129.0	66.84	216.8
130.0	66.89	215.9

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 Consulting Engineers
 Exhibit E-7 - Single Channel Spacing Study
 NEW - Sedalia, Missouri

REFERENCE		DISPLAY DATES
38 45 38.80 N.	CLASS = C3	DATA 10-30-21
93 27 53.60 W.	Current Spacings to 3rd Adj.	SEARCH 10-30-21
----- Channel 202 - 88.3 MHz -----		

Call	Channel	Location	Azi	Dist	FCC	Margin

K06PT-D	CP 06 --	Columbia	MO 78.3	100.09	256.5	-156.4
K06PT-D	APP-D 06 --	Columbia	MO 74.3	106.95	256.5	-149.6
NEW	CP 06 --	Rolla	MO 120.6	171.43	256.5	-85.1
KJAB-FM	LIC-D 202C1	Mexico	MO 73.8	141.49	210.5	-69.0
KJNW	LIC-D 203C1	Kansas City	MO 291.8	95.05	143.5	-48.5
KWND	LIC-D 202C1	Springfield	MO 168.0	179.86	210.5	-30.6
KBJQ	LIC-D 202C2	Bronson	KS 234.9	165.02	176.5	-11.5
KCOU	LIC 201A	Columbia	MO 78.3	101.25	88.5	12.8
KHJR	LIC-D 201A	St. Thomas	MO 101.5	112.14	88.5	23.6
KLWL	LIC 201A	Chillicothe	MO 354.9	117.52	88.5	29.0
KJTY	LIC 201C1	Topeka	KS 280.8	174.95	143.5	31.5
KYLF	APP-D 205C2	Adrian	MO 228.6	93.79	55.5	38.3
KYLF	LIC-D 205C2	Adrian	MO 228.6	93.79	55.5	38.3
KMST	LIC 203C1	Rolla	MO 124.6	185.97	143.5	42.5

 All separation margins include rounding

NEW.X
Proposed
Latitude: 38-45-38.80 N
Longitude: 093-27-53.60 W
ERP: 13.00 kW
Channel: 202
Frequency: 88.3 MHz
AMSL Height: 333.5 m
Horiz. Pattern: Directional
Prop Model: FCC Contour

Jeremy Ruck & Associates, Inc.

320 kilometer
site radius

NEW.X

42-00-00 N

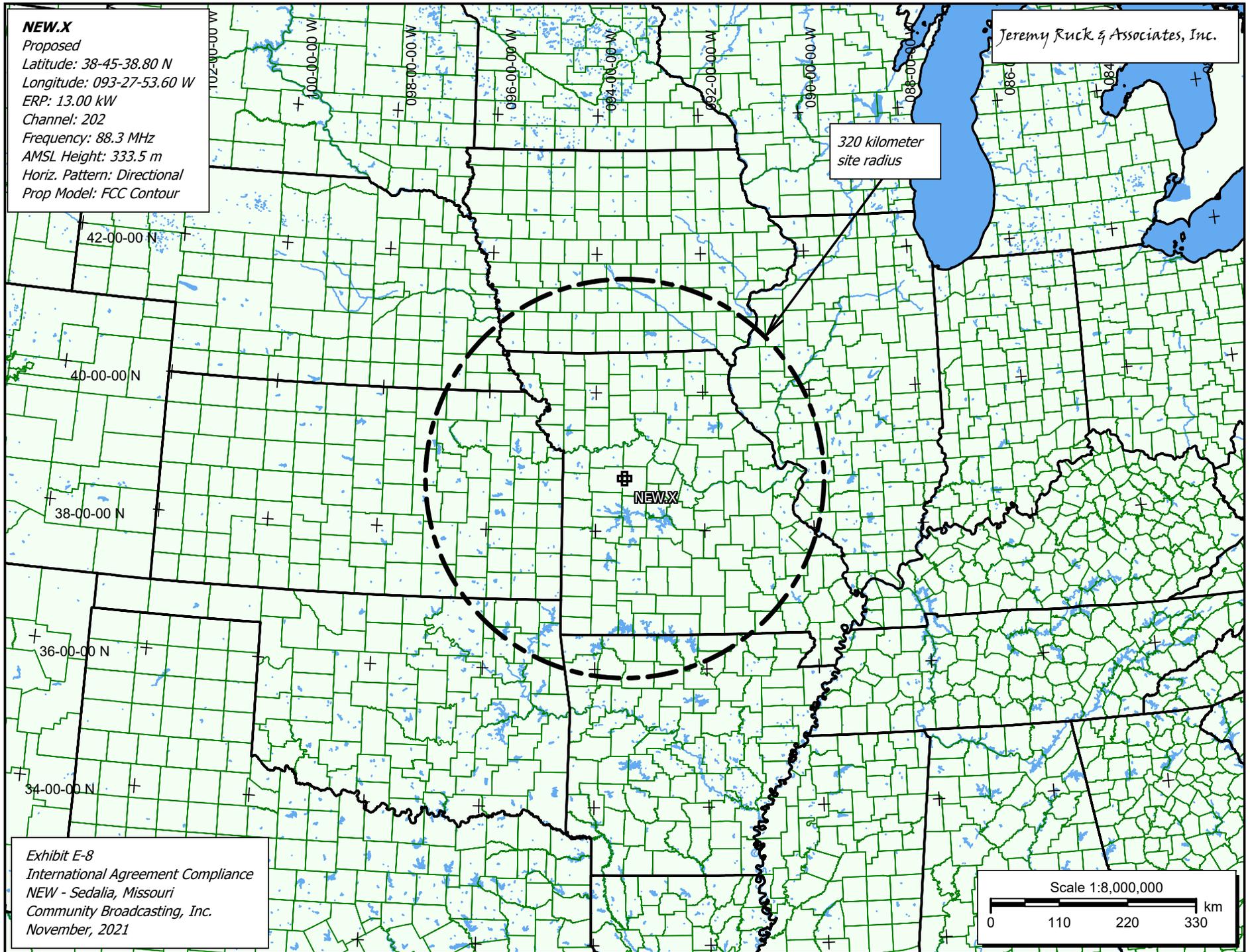
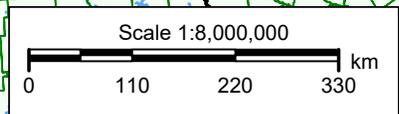
40-00-00 N

38-00-00 N

36-00-00 N

34-00-00 N

Exhibit E-8
International Agreement Compliance
NEW - Sedalia, Missouri
Community Broadcasting, Inc.
November, 2021



NEW.X
 Latitude: 38-45-38.80 N
 Longitude: 093-27-53.60 W
 ERP: 13.00 kW
 Channel: 204
 Frequency: 88.7 MHz
 AMSL Height: 333.5 m
 Horiz. Pattern: Directional
 Prop Model: FCC Contour

Jeremy Ruck & Associates, Inc.

- Proposed 60 dBu Service Contour
- Other NCE 60 dBu Service Contours
- Area of First Local NCE Service
- Area of Second Local NCE Service
- Area of Third Local NCE Service

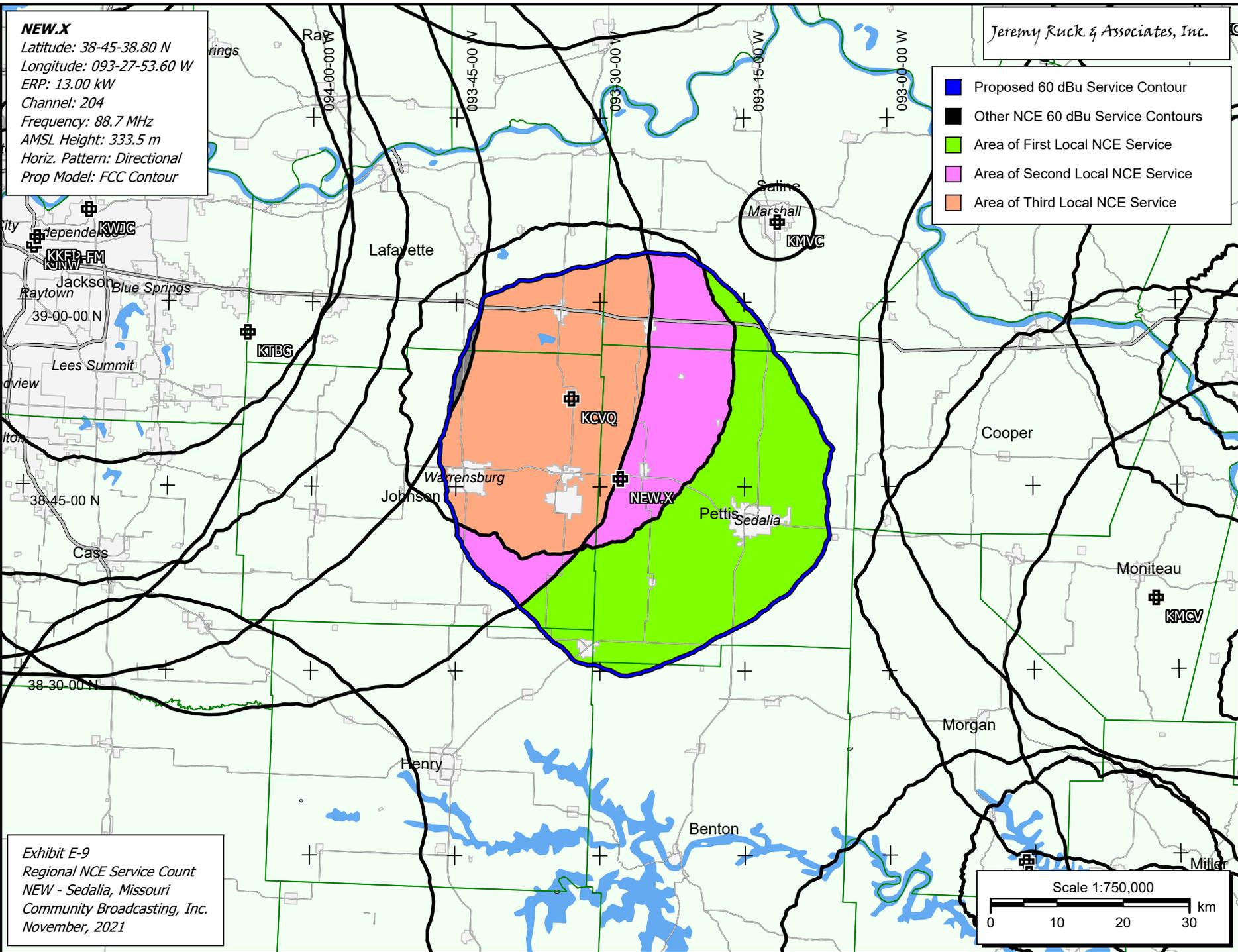
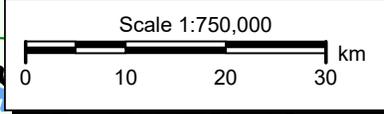


Exhibit E-9
 Regional NCE Service Count
 NEW - Sedalia, Missouri
 Community Broadcasting, Inc.
 November, 2021



NEW.X

Proposed
Latitude: 38-45-38.80 N
Longitude: 093-27-53.60 W
ERP: 13.00 kW
Channel: 202
Frequency: 88.3 MHz
AMSL Height: 333.5 m
Horiz. Pattern: Directional
Prop Model: FCC Contour

K234CE

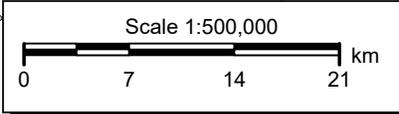
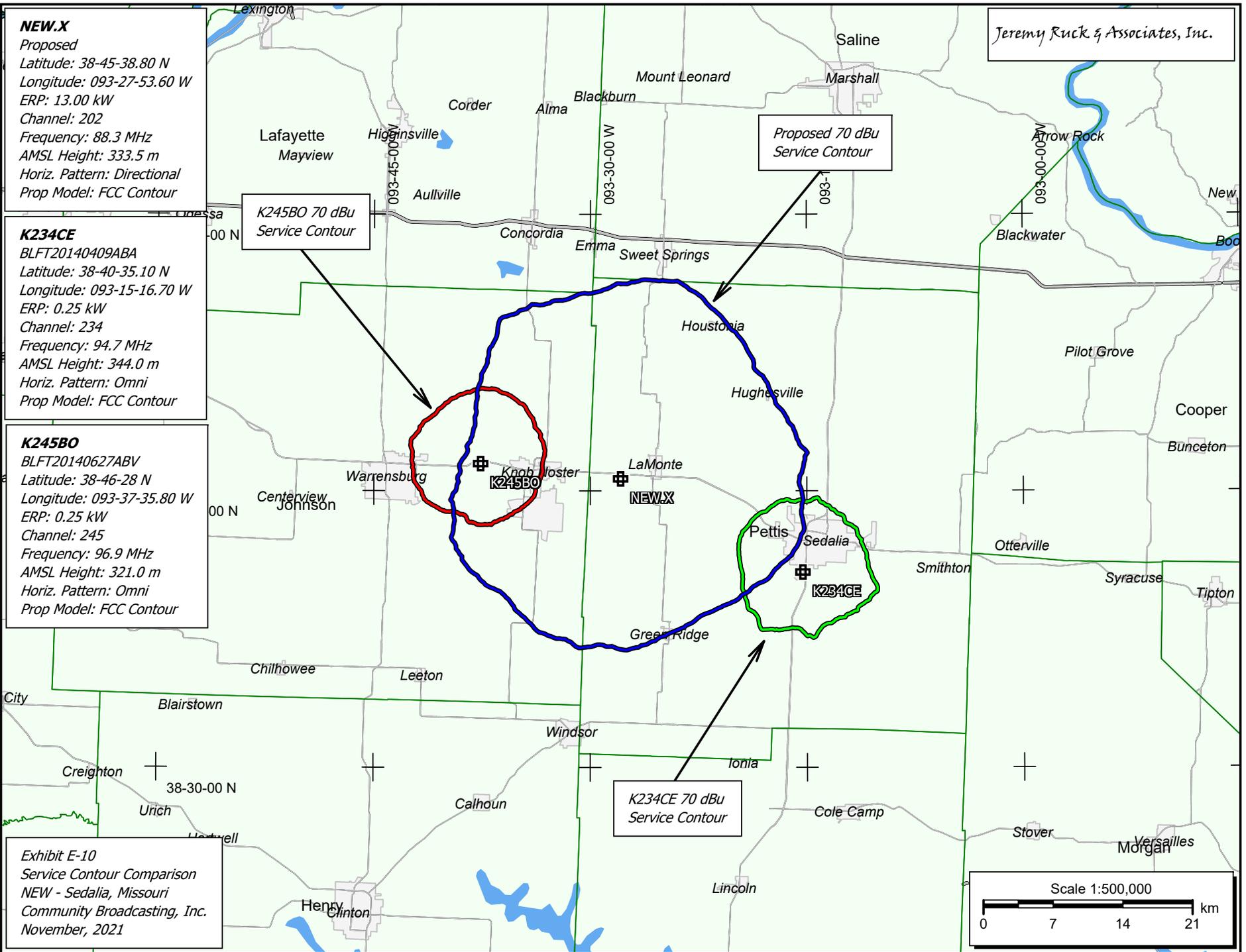
BLFT20140409ABA
Latitude: 38-40-35.10 N
Longitude: 093-15-16.70 W
ERP: 0.25 kW
Channel: 234
Frequency: 94.7 MHz
AMSL Height: 344.0 m
Horiz. Pattern: Omni
Prop Model: FCC Contour

K245BO

BLFT20140627ABV
Latitude: 38-46-28 N
Longitude: 093-37-35.80 W
ERP: 0.25 kW
Channel: 245
Frequency: 96.9 MHz
AMSL Height: 321.0 m
Horiz. Pattern: Omni
Prop Model: FCC Contour

Exhibit E-10
Service Contour Comparison
NEW - Sedalia, Missouri
Community Broadcasting, Inc.
November, 2021

Jeremy Ruck & Associates, Inc.





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