

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

NCE FM STATION KJWM(FM)
GRAND ISLAND, NEBRASKA
91.5 MHZ / CHANNEL 218C2 / FACILITY ID: 90676

VSS CATHOLIC COMMUNICATIONS, INC.

SEPTEMBER 2021

APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **VSS Catholic Communications, Inc.** (“VSS”), licensee of NCE FM station KJWM(FM) at Grand Island, Nebraska, and are in support of their application for construction permit.¹ This application proposes an increase in the effective radiated power of the facility at the current location licensed. This application seeks a waiver of Section 73.509 of the Commission’s Rules pursuant to the *Raleigh Waiver* concept.

KJWM is licensed to operate on FM channel 218 as a class C2 facility with a maximum effective radiated power of 11.5 kW at a center of radiation of 180.4 meters above average terrain, 167 meters above ground level, utilizing a non-directional antenna. Under the current license, these elevations correspond to an antenna center of radiation of 783.9 meters above mean sea level. The proposed facility would continue operation as a class C2 facility on channel 218 with an effective radiated power of 35 kW. The proposed center of radiation is 783.9 meters above mean sea level, 167 meters above ground level, however, the center of radiation above average terrain would be changed to 177.2 meters based on an eight-radial sample of the Commission’s 30-meter terrain database.

Since no change in the site location or channel of operation is proposed under this application, the specified technical parameters constitute a minor change to the current license. Exhibit E-1 is a map depicting both the licensed and proposed 60 dBu service contours. Additionally, this map also demonstrates that the proposed facility complies with the provisions of

¹ The Facility ID for KJWM at Grand Island, Nebraska is 90676.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
Canton, IL 61520

Tel: 309.789.8750
Fax: 855.332.9537
jeremyruck.com

Section 73.515 of the Commission's Rules, as the entire community of Grand Island, Nebraska is located within the predicted 60 dBu service contour.

KJWM complies with the provisions of Section 73.1125 of the Commission's Rules, and would continue to do so. Residents of the region, including those within the community of license, enjoy toll-free telephone access to the main studios for KJWM. The facility is licensed to Grand Island, Nebraska, and no change to the community of license is proposed under this application.

The KJWM technical parameters under this application comply with the interference protection requirements of Sections 73.207 and 73.525 of the Commission's Rules. In the case of Section 73.509, the proposed facility complies with the provisions of that section with regards to all relevant facilities, with the exception of two. In that case, a *Raleigh Waiver* of Section 73.509 is proposed.

Exhibit E-2 is a single channel spacing study for the proposed technical parameters. This study does not indicate any facilities operating on channels 221, 271, and 272 where the minimum spacing requirements under Section 73.207 would not be met. Additionally, this study also lists KWNB-TV at Hayes Canter, Nebraska as a broadcast channel six facility in the region.² This study demonstrates that the distance to KWNB-TV from the proposed facility is 208.2 kilometers, while 166 kilometers is required.

Exhibit E-3 is the tabular overlap study for the proposed technical parameters. This study includes all current authorizations and applications of relevance to the proposed KJWM proposed

² The Facility ID for KWNB-TV at Hayes Center, Nebraska is 21162.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
Canton, IL 61520

Tel: 309.789.8750
Fax: 855.332.9537
jeremyruck.com

technical parameters. The contour map in Exhibit E-4 is an overview of the contour overlap situation under Section 73.509. All maps, tabulations, and contour calculations in this application are based on the use of the Commission's 30-meter terrain database.

As Exhibits E-3 and E-4 demonstrate, there is predicted incoming overlap to the proposed technical parameters of KJWM from KLPR at Kearney, Nebraska, and the licensed technical parameters for KJGS at Aurora, Nebraska.³ Additional detail in the overlap regions of KLPR and KJGS is depicted respectively in Exhibits E-5 and E-6.

The licensed 60 dBu service contour for KJWM encompasses 5,664 square kilometers with a resident population of 109,345 persons by the 2010 Census. The proposed 60 dBu service contour encompasses 8,575 square kilometers with a resident population of 154,694 persons by Census data from 2010. The proposed technical parameters represent an increase in the KJWM service area of 51.4 percent, and an increase of 41.5 percent in the service area population.

With regard to KLPR, the area of overlap is 9.2 square kilometers, with a resident population of 12,620 persons. Thus, the area of contour overlap is 0.11 percent of the total within the KJWM proposed 60 dBu service contour. The licensed KJGS 100 dBu F(50,10) contour encompasses an area of 3.1 square kilometers, with a resident population of 2,189 persons. This overlap area represents 0.04 percent of the total within the proposed 60 dBu service contour. In the aggregate, the total area of normally prohibited overlap is 12.3 square kilometers, which is 0.14 percent of the total area of the proposed 60 dBu service contour. It is respectfully submitted that the limited area

³ The Facility ID for KLPR at Kearney, Nebraska is 33787. The Facility ID for KJGS at Aurora, Nebraska is 175743. The file number of the KJGS license is BLED-20121126AAE.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
Canton, IL 61520

Tel: 309.789.8750
Fax: 855.332.9537
jeremyruck.com

of contour overlap is significantly outweighed by the large increase in service area that would be gained by the proposed KJWM power increase, and a waiver of Section 73.509 is warranted. Although not specifically depicted in this application, the proposed increase in the KJWM effective radiated power would also create large areas where KJWM provides a first or second local NCE service.

Exhibit E-7 illustrates a 320-kilometer radius centered on the KJWM transmitter site. As this map demonstrates, this radius falls well short of either the Canadian or Mexican border with the United States.

The proposed facility would not constitute a significant environmental impact, and is exempt from environmental processing. The proposed site involves 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 to persons in the vicinity of the structure. The antenna utilized by the facility is an Electronics Research, Inc. ("ERI") model SHPX-6AC. This is a six-element type-3 antenna with 1.0 wavelength spacing between the bays. *FM Model* returns a maximum calculated power density of $5.87 \mu\text{W}/\text{cm}^2$ at a distance of 52 meters from the tower. This value is well below the upper limit permissible under the uncontrolled environment condition of the Commission's safety standard. VSS 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 applicable safety standards. Such coordination activities will include, but are not necessarily limited to, a reduction in transmitter power or cessation of operation.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
Canton, IL 61520

Tel: 309.789.8750
Fax: 855.332.9537
jeremyruck.com

9.27.2021

5

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
September 27, 2021

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
Canton, IL 61520

Tel: 309.789.8750
Fax: 855.332.9537
jeremyruck.com

9.27.2021

KJWM.X

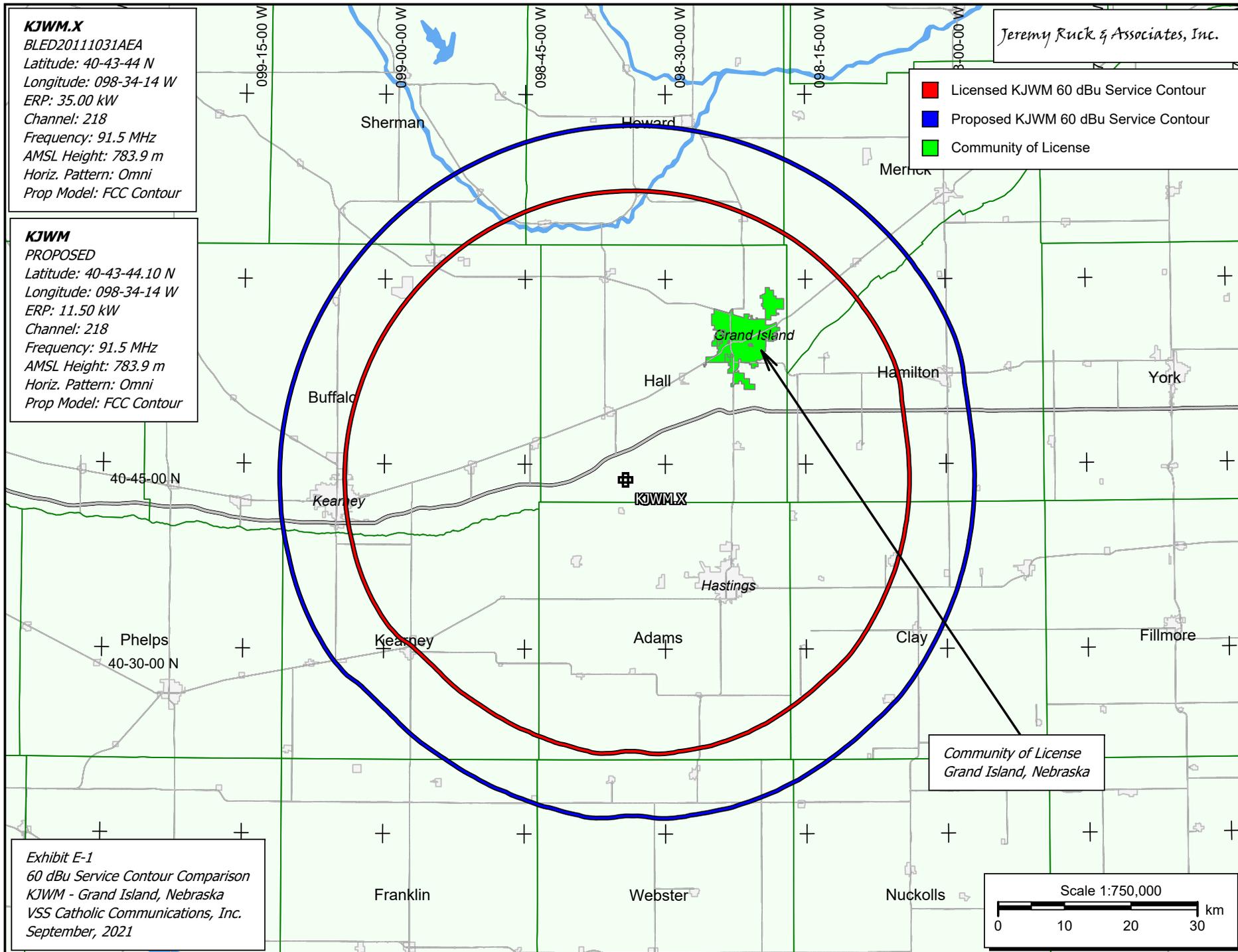
BLED20111031AEA
Latitude: 40-43-44 N
Longitude: 098-34-14 W
ERP: 35.00 kW
Channel: 218
Frequency: 91.5 MHz
AMSL Height: 783.9 m
Horiz. Pattern: Omni
Prop Model: FCC Contour

KJWM

PROPOSED
Latitude: 40-43-44.10 N
Longitude: 098-34-14 W
ERP: 11.50 kW
Channel: 218
Frequency: 91.5 MHz
AMSL Height: 783.9 m
Horiz. Pattern: Omni
Prop Model: FCC Contour

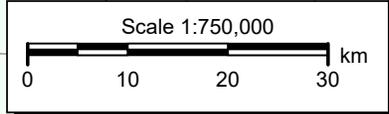
Jeremy Ruck & Associates, Inc.

- Red square: Licensed KJWM 60 dBu Service Contour
- Blue square: Proposed KJWM 60 dBu Service Contour
- Green square: Community of License



Community of License
Grand Island, Nebraska

Exhibit E-1
60 dBu Service Contour Comparison
KJWM - Grand Island, Nebraska
VSS Catholic Communications, Inc.
September, 2021



Jeremy Ruck & Associates, Inc.
 Consulting Engineers
 Exhibit E-2 - Single Channel Spacing Study
 KJWM - Grand Island, Nebraska

REFERENCE		DISPLAY DATES
40 43 44.00 N.	CLASS = C2	DATA 09-27-21
98 34 14.00 W.	Current Spacings to 3rd Adj.	SEARCH 09-27-21
----- Channel 218 - 91.5 MHz -----		

Call	Channel	Location	Azi	Dist	FCC	Margin
KJWM	LIC 218C2	Grand Island	NE 0.0	0.00	189.5	-189.5
KJGS	APP-Z 220C1	Aurora	NE 62.0	59.20	78.5	-19.3
KSNB	LIC 218A	Norton	KS 227.7	152.73	165.5	-12.8
KLPR	LIC 216A	Kearney	NE 266.6	44.46	54.5	-10.0
KJGS	LIC 220A	Aurora	NE 71.4	50.46	54.5	-4.0
KRNY	LIC 272C1	Kearney	NE 238.3	26.74	26.5	0.24
KIOS-FM	LIC 218C1	Omaha	NE 73.1	225.46	223.5	2.0
KTLX	LIC 217A	Columbus	NE 51.8	129.20	105.5	23.7
KWNB-TV-A	CHA 6 --	Hayes Center	NE 267.6	208.22	165.5	42.7
KWNB-TV	LI 06 2C	Hayes Center	NE 267.6	208.23	165.5	42.7
KWNB-TV	CP 06 2C	Hayes Center	NE 267.6	208.23	165.5	42.7

 All separation margins include rounding

Jeremy Ruck & Associates, Inc.
Consulting Engineers

Exhibit E-3 - Tabular Contour Interference Study

KJWM - Grand Island, Nebraska

REFERENCE CH# 218C2 - 91.5 MHz, Pwr= 35 kw, HAAT= 178.8 M, COR= 783.9 M
40 43 44.00 N. Average Protected F(50-50)= 52.32 km
98 34 14.00 W. Omni-directional

DISPLAY DATES
DATA 09-27-21
SEARCH 09-27-21

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*
218C2	KJWM	LIC _CN		0.0	0.00	40 43 44.10	11.500		---Reference---		
Grand Island		NE		180.0	BLED20111031AEA	98 34 14.00	180	784	Vss Catholic Communication		
216A	KLPR	LIC _CN		266.6	44.34	40 42 14.70	3.800	1.9	19.1	-9.6*	19.4
Kearney		NE		86.3	BLED20130606AAD	99 05 44.90	37	697	Klpr-Fm, University Of Neb		
220A	KJGS	LIC _CN		71.4	50.34	40 52 18.00	0.200	1.0	6.7	-4.1*	37.6
Aurora		NE		251.8	BLED20121126AAE	98 00 10.20	8	555	Radio 74 Internationale		
272C1	KRNY«	LIC _CN		238.3	26.74	40 36 08.00	79.000	0.0	0.0	26.5R	0.24M
Kearney		NE		58.1	BMLH20020430AAL	98 50 22.30	331	967	Nrg License Sub, LLC		
220C1	KJGS	APP ZCN		62.0	59.09	40 58 36.00	100.000	3.4	33.4	1.1	19.4
Aurora		NE		242.4	0000160264	97 56 56.00	52	592	Radio 74 Internationale		
218A	KSNB	LIC _CN		227.7	152.59	39 47 51.00	0.250	41.2	12.0	61.4	9.7
Norton		KS		46.8	BLED20101221AAK	99 53 30.40	52	775	American Family Associatio		
218C1	KIOS-FM	LIC _CN		73.1	224.91	41 17 14.90	55.000	140.6	53.8	31.1	36.4
Omaha		NE		254.8	BLED19890508KA	95 59 38.00	169	503	Douglas County School Dist		
217A	KTLX	LIC _CN		51.8	129.03	41 26 26.00	0.250	10.1	7.1	64.8	42.1
Columbus		NE		232.6	BLED20130313ADJ	97 21 15.10	10	460	Tlc Educational Corporatio		

Terrain database is FCC 30 meter , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. 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)
"*"affixed to 'IN' or 'OUT' values = site inside restricted contour.
« = Station meets FCC minimum distance spacing for its class.

KJWM.X
PROPOSED
 Latitude: 40-43-44 N
 Longitude: 098-34-14 W
 ERP: 35.00 kW
 Channel: 218
 Frequency: 91.5 MHz
 AMSL Height: 783.9 m
 Horiz. Pattern: Omni
 Prop Model: FCC Contour

St. 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

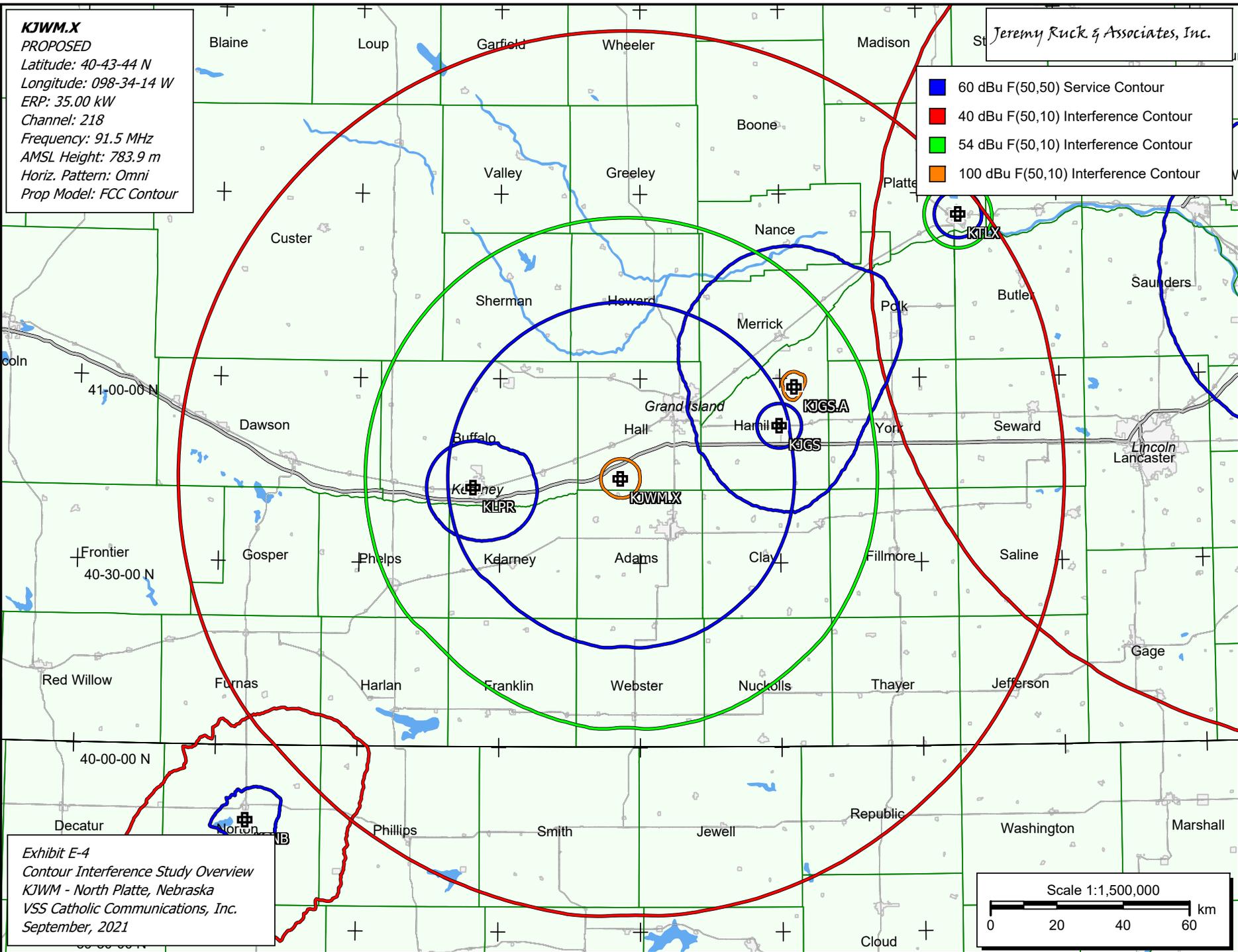
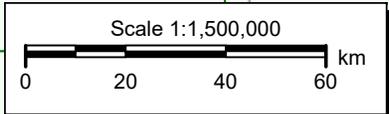


Exhibit E-4
 Contour Interference Study Overview
 KJWM - North Platte, Nebraska
 VSS Catholic Communications, Inc.
 September, 2021



KJWM.X
PROPOSED
Latitude: 40-43-44 N
Longitude: 098-34-14 W
ERP: 35.00 kW
Channel: 218
Frequency: 91.5 MHz
AMSL Height: 783.9 m
Horiz. Pattern: Omni
Prop Model: FCC Contour

Jeremy Ruck & Associates, Inc.

KJWM Proposed 60 dBu
F(50,50) Contour

KLPR 100 dBu
F(50,10) Contour

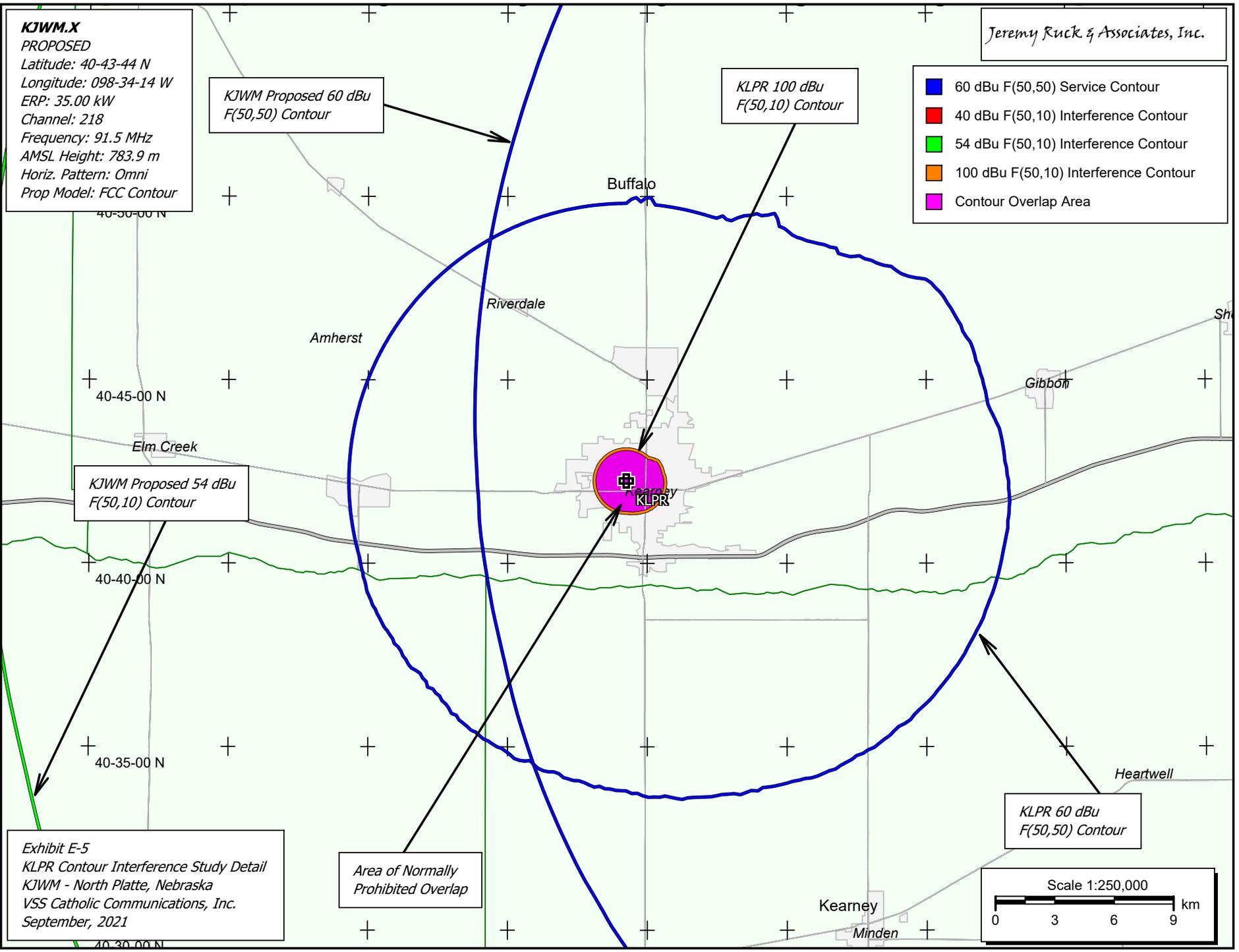
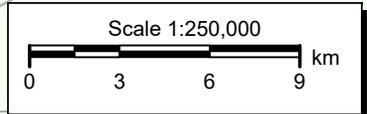
- 60 dBu F(50,50) Service Contour
- 40 dBu F(50,10) Interference Contour
- 54 dBu F(50,10) Interference Contour
- 100 dBu F(50,10) Interference Contour
- Contour Overlap Area

KJWM Proposed 54 dBu
F(50,10) Contour

Area of Normally
Prohibited Overlap

Exhibit E-5
KLPR Contour Interference Study Detail
KJWM - North Platte, Nebraska
VSS Catholic Communications, Inc.
September, 2021

KLPR 60 dBu
F(50,50) Contour



KJWM.X
 PROPOSED
 Latitude: 40-43-44 N
 Longitude: 098-34-14 W
 ERP: 35.00 kW
 Channel: 218
 Frequency: 91.5 MHz
 AMSL Height: 783.9 m
 Horiz. Pattern: Omni
 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
- Contour Overlap Area

KJWM Proposed 60 dBu F(50,50) Contour

KJGS Licensed 60 dBu F(50,50) Contour

Area of Normally Prohibited Overlap

KJGS Licensed 100 dBu F(50,10) Contour

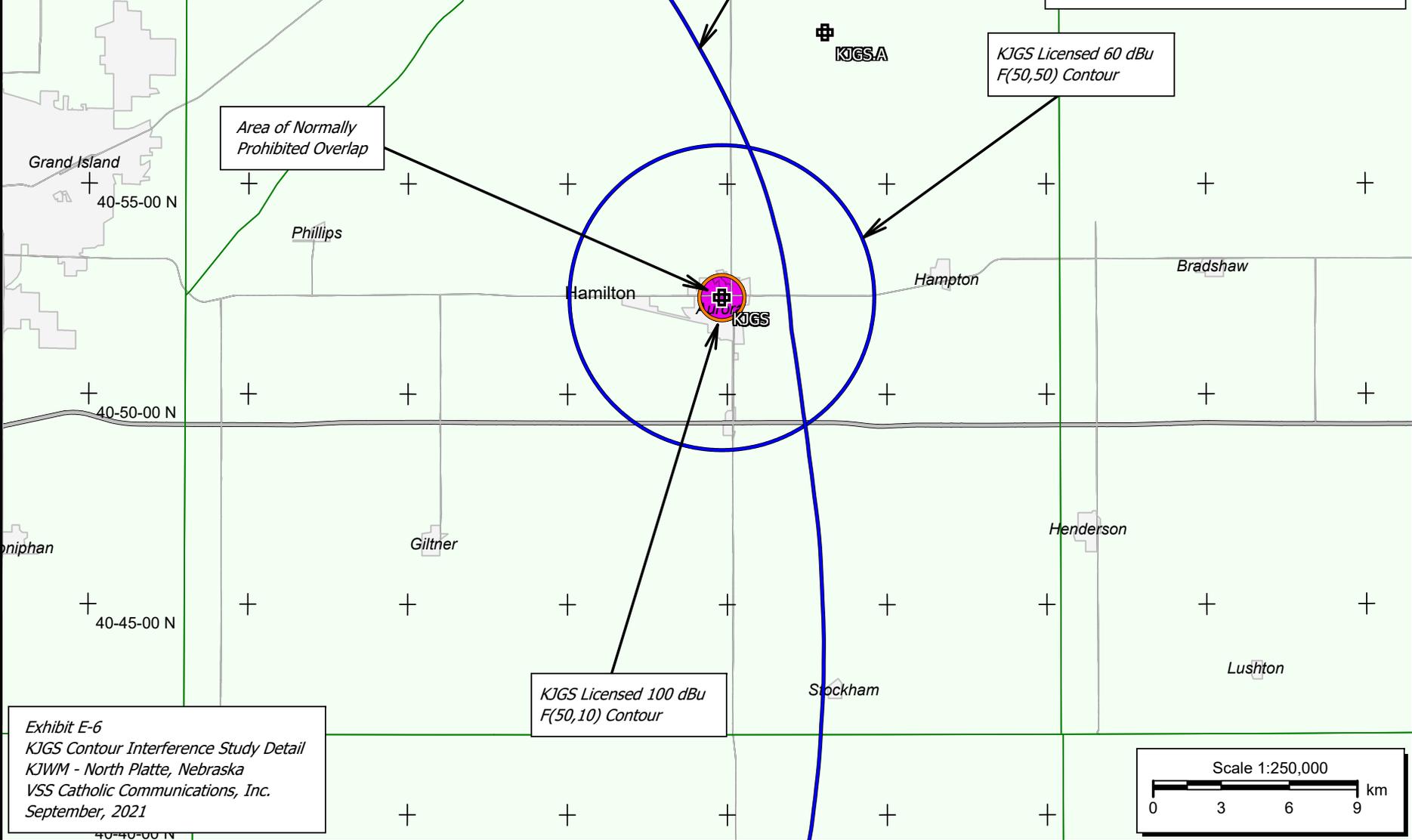
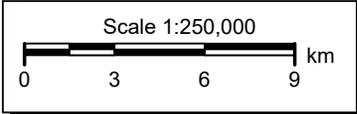


Exhibit E-6
 KJGS Contour Interference Study Detail
 KJWM - North Platte, Nebraska
 VSS Catholic Communications, Inc.
 September, 2021



KJWM.X
BLED20111031AEA
Latitude: 40-43-44 N
Longitude: 098-34-14 W
ERP: 35.00 kW
Channel: 218
Frequency: 91.5 MHz
AMSL Height: 783.9 m
Horiz. Pattern: Omni
Prop Model: FCC Contour

Jeremy Ruck & Associates, Inc.

KJWM 320 km
Site Radius

KJWM.X

Exhibit E-7
International Agreement Compliance
KJWM - Grand Island, Nebraska
VSS Catholic Communications, Inc.
September, 2021

