

## APPLICATION FOR NEW FM STATION

88.9mHz, Channel 205 Culbertson, NE

Theatre Organ Preservation of Nebraska

### TECHNICAL EXHIBITS

#### Section 73.509 Allocation study 300 watts 100m HAAT

The FCC database was searched for 88.9 Mhz channel 205 with the following results using a proposed antenna site at NAD 27 40°11' 26.17" NL and 100°48'26.11" WL (NAD 83 40°11'26.17"NL and 100°48'27.68" WL)

88.9														
Call	KML Maps	Channel	Class	Service	Frequency	Status	City	State	Country	File Number	FacilityID	ERP	HAAT	Dist(km)
K204CD	KML/Fill/Text	204 D	FX		88.7 MHz	LIC	TRIBUNE	KS	US	BLFT-20170928ACT	25115	0.25 kW	0 m	206.87 km
KLNE-FM	KML/Fill/Text	204 C1	FM		88.7 MHz	LIC	LEXINGTON	NE	US	BLEDE-20070614AEH	47968	65. kW	296.8 m	116.72 km
K204FC	KML/Fill/Text	204 D	FX		88.7 MHz	LIC	SIDNEY	NE	US	BLFT-20070622ADU	154210	0.205 kW	61.1 m	207.26 km
KPRD	KML/Fill/Text	205 C1	FM		88.9 MHz	LIC	HAYS	KS	US	BLEDE-19940902KFF	66273	83. kW	194 m	237.77 km
K205CU	KML/Fill/Text	205 D	FX		88.9 MHz	LIC	BURWELL	NE	US	BLFT-19970424TA	82283	0.235 kW	37 m	229.71 km
KBWA	KML/Fill/Text	206 A	FM		89.1 MHz	LIC	BRUSH	CO	US	BLEDE-20120712ABX	91420	1.5 kW	44.2 m	245.99 km
K206BD	KML/Fill/Text	206 D	FX		89.1 MHz	LIC	JULESBURG	CO	US	BLFT-19940322TD	55600	0.074 kW	192 m	154.69 km
K206BU	KML/Fill/Text	206 D	FX		89.1 MHz	LIC	SEIBERT	CO	US	BLFT-19970203TC	78201	0.25 kW	64 m	202.59 km
K206BU	KML/Fill/Text	206 D	FX		89.1 MHz	CP	SEIBERT	CO	US	0000087029	78201	0.25 kW	64 m	217.07 km
KHNE-FM	KML/Fill/Text	206 C1	FM		89.1 MHz	LIC	HASTINGS	NE	US	BLEDE-19900625K8	47964	68. kW	329 m	239.32 km
K207BP	KML/Fill/Text	207 D	FX		89.3 MHz	LIC	QUINTER	KS	US	BLFT-19950703TA	24699	0.232 kW	74 m	133.24 km
KJTF	KML/Fill/Text	207 A	FM		89.3 MHz	LIC	NORTH PLATTE	NE	US	BLEDE-20110110AAY	175433	0.69 kW	164 m	89.75 km

Exhibit 1A shows the non-overlapping contours of the proposed and the existing contours of co-channel KPRD, Hays, KS. Exhibit 1B shows 1<sup>st</sup> adjacent KLNE-FM of Lexington, NE. Exhibit 1C shows 3<sup>rd</sup> Adjacent KJTF of North Platte, NE. There are no second adjacent stations within range to consider.

The FCC 50,10 charts were used for the 40, 54 and 100 dbu contours and the 50,50 charts were used for calculation of the 60 dbu contours using HAAT calculated from the FCC 30 second terrain database. For existing stations 60dbu contours were generated by the FCC. As can be seen, there is nothing even CLOSE to overlapping.

73.515A of the FCC rules requires a 60dbu signal over 50% of the community to be served. The 60dbu Signal in Exhibit 6 is shown to completely encompass the village of Culbertson and extends past the city limits.

This proposed FM would be the FM Non-commercial service in the area. Population within the 60dbu service area is 5,268 (2010 Census) covering 569.8 sq km. (Calculated in Exhibit 2)

All 5,268 persons will receive a first Non-Commercial FM service . Details in Exhibit 16.

### **FCC 73.207 IF Considerations**

88.9MHz (Proposed) +10.6 and +10.8 = 99.5 and 99.7MHz. The proposed FM is equivalent to a Class A station. The only stations within 200km on these two channels is KOGA-FM, Ogallala, NE on 99.7MHz (106.86 km distant) and KHAZ Hays, KS on 99.5MHz (186.51km distant). Both of these are Class C1 stations. Class C1 to Class A IF separation requirement according to 73.207 FCC rules is 22km.

Therefore, there is no IF separation problem.

### **FCC 73.318 Blanketing Interference:**

Using the formula in 73.318 (  $D \text{ (in kilometers)} = 0.394 \sqrt{P}$  ) the distance of the blanketing contour is .22 Km. There are no known residences or occupied dwellings within that range. Nonetheless, If any blanketing complaints arise applicant accepts responsibility to solve them.

### **CHANNEL 6 72.525 Considerations:**

73.525(a)1 requires a minimum separation of 225km for channel 205 with respect to any Channel 6 full power television station.

There is one existing channel 6 operation at 51.83 km distance. KWNB-TV, Hayes Center, NE is affected by this proposal. KWNB uses a non-directional, horizontal only antenna from an HAAT of 221 meters above average terrain. The coordinates of KWNB are 40-37-32 and 101-01-47. KWNB-TV is now a DTV station licensed and with a construction permit to increase power from 11.9kw to 45kw from the same site.

Exhibit 3 proves there are less than 3000 countable persons within the interference area calculated. 2,206 or 941 persons depending on the method used are calculated to receive interference. All of these are mitigated by a strong signal available from KWNB-LD a translator station rebroadcasting KWNB-TV, resulting in zero persons to count for Channel 6 interference.

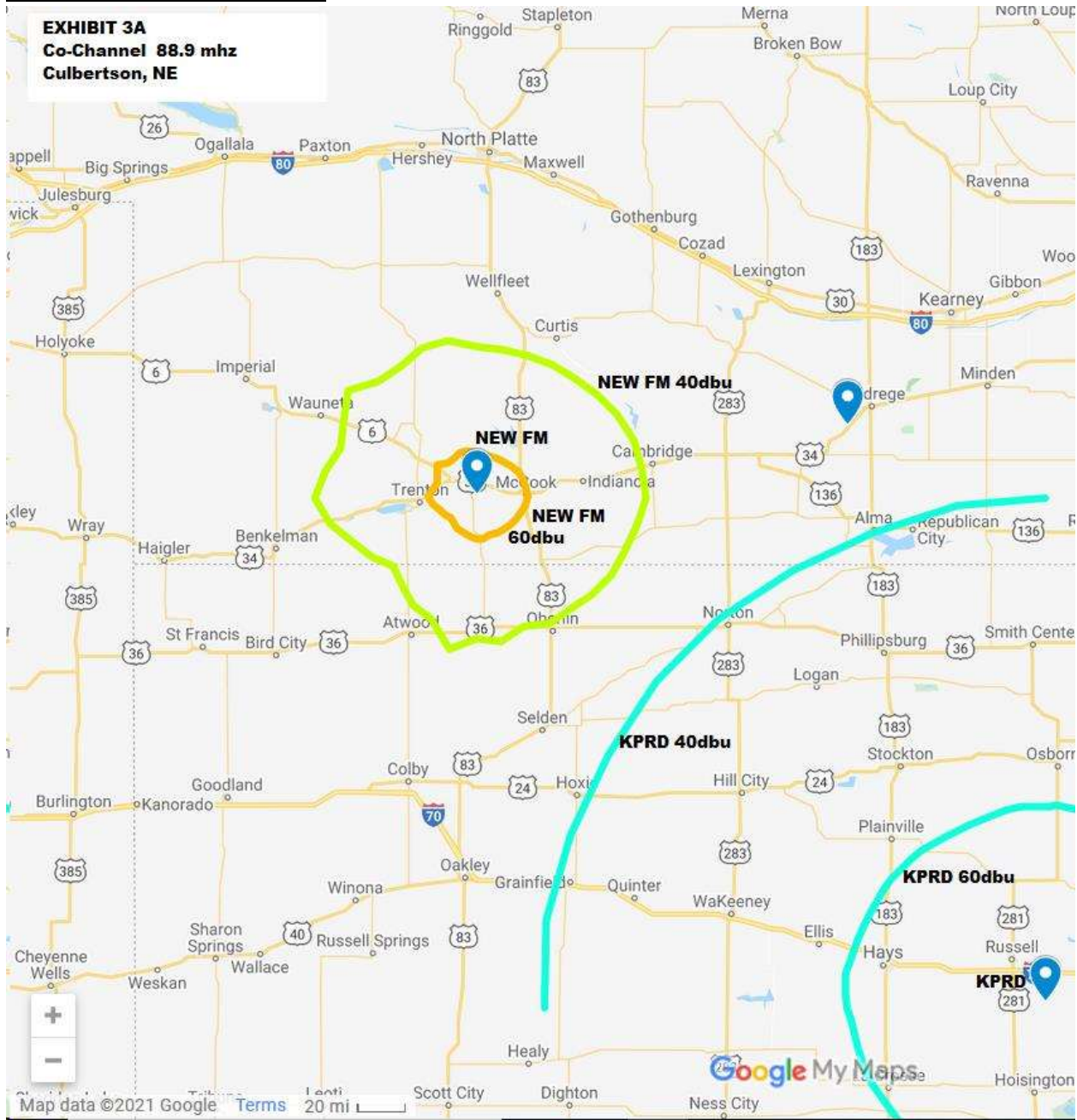
This is all outlined in Exhibit 3.

### **OTHER NOTES:**

Maps in this exhibit provided by Google Maps within the terms of use.

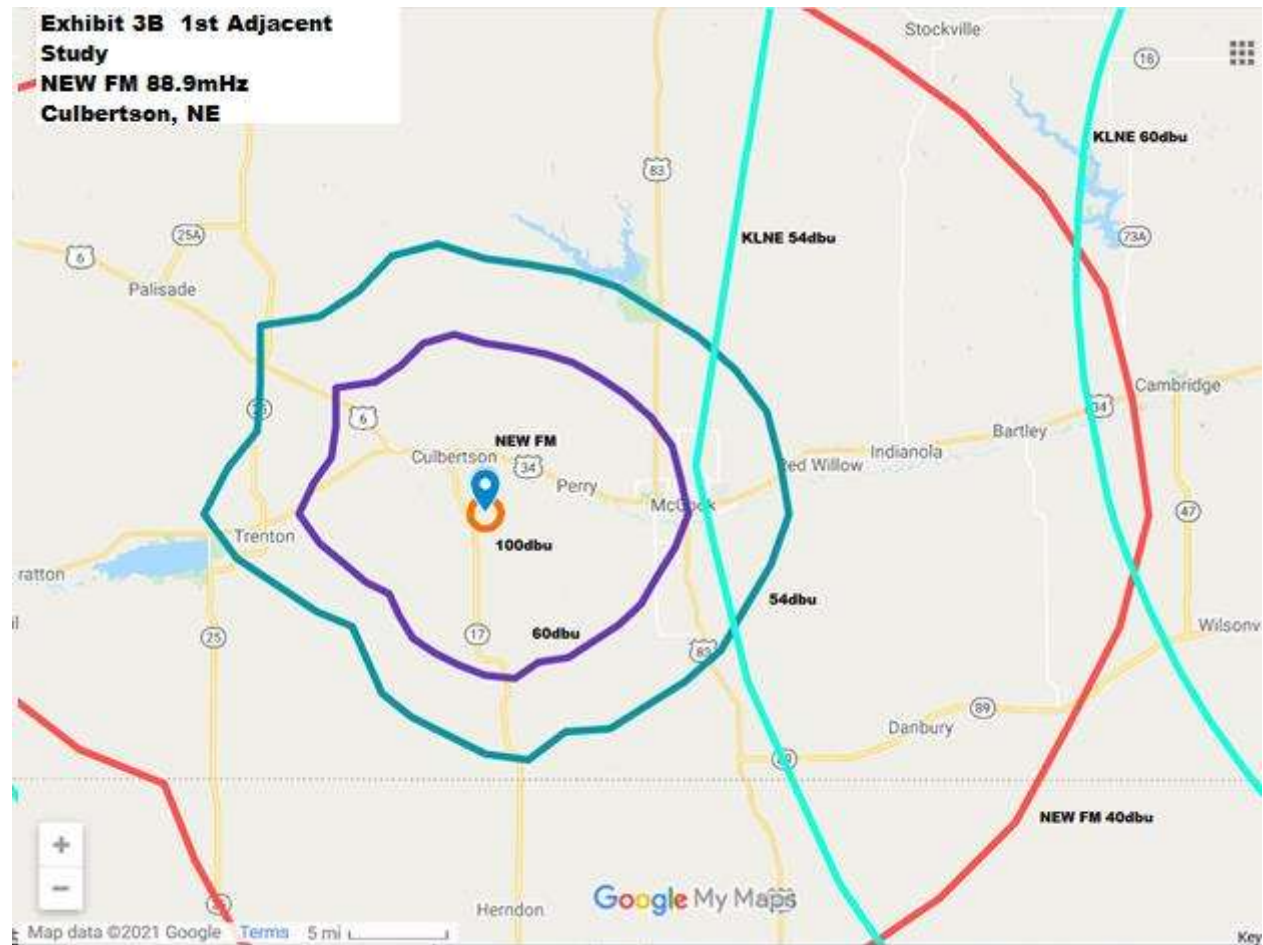
The applicant certifies that the proposed facility complies with the Commission's engineering standards and assignment requirements for FM stations including CFR §§ 73.203, 73.207, 73.213, 73.315, 73.509, 73.515, and 73.525.

### **EXHIBIT 1A Co-Channel Study**



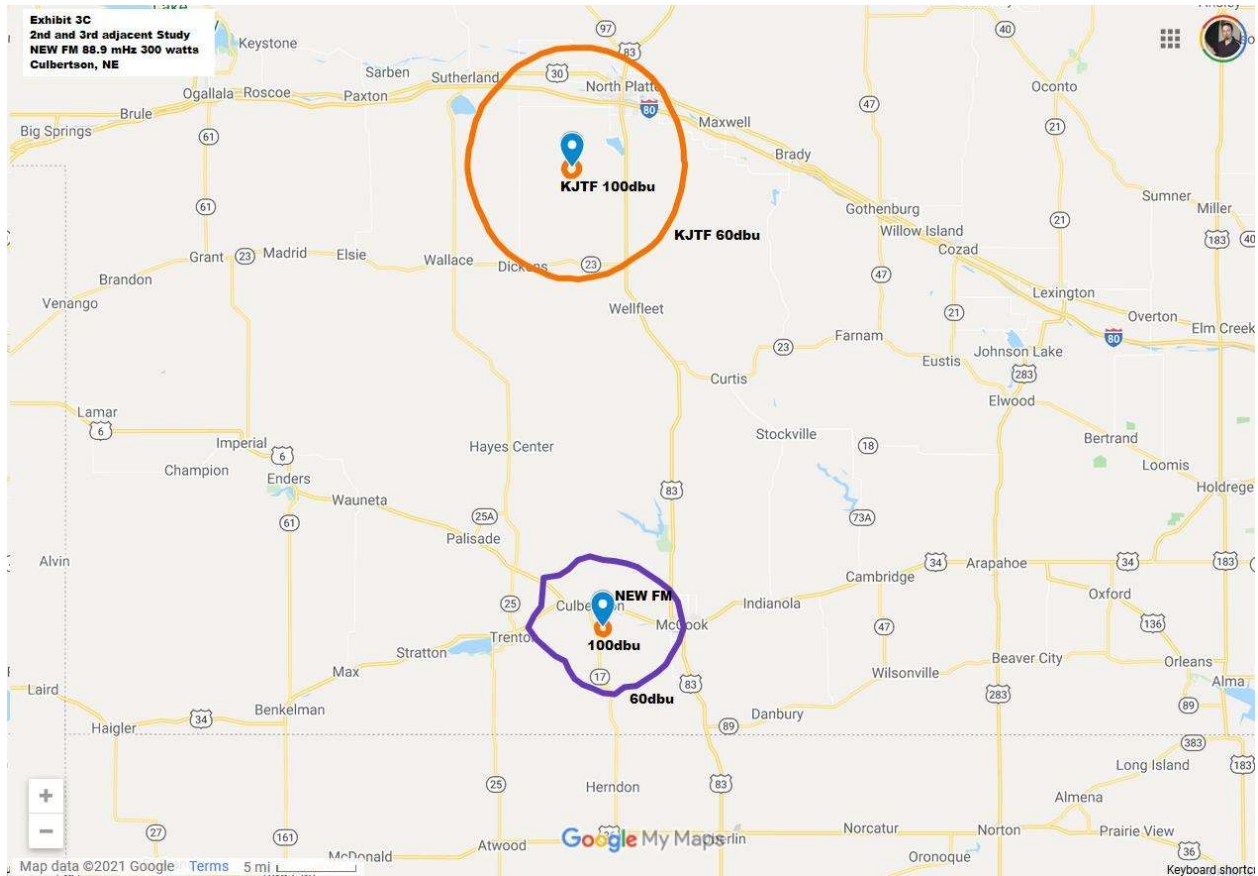
As can be seen there is nothing close to overlap on the co-channel map. The only station close is KPRD in Hays, KS, shown here. 40dbu and 60dbu contours shown.

### EXHIBIT 1B 1<sup>st</sup> Adjacent Study



On this map we see that 1<sup>st</sup> Adjacent KLNE, Lexington's 54dbu contour is not crossed by the NEW FM 60dbu contour and likewise the KLNE 60dbu is not crossed by the 54dbu contour of the new FM. (The red 40dbu contour is irrelevant to this map)

### **EXHIBIT 1C 2<sup>nd</sup> and 3<sup>rd</sup> Adjacent Study**



The closest 2<sup>nd</sup> adjacent FM station is KJTF, North Platte. Not even close to overlapping 100dbu and 60dbu in either direction. No 3<sup>rd</sup> adjacent stations are within range of the study.



## **Exhibit 2 Population and Area of Proposed Coverage:**

In the following table we have in column 1 all of the Census subdivisions located within the 60dbu proposed coverage area. Column 2 shows the TOTAL population of the entire precinct. Column 3 shows the percentage land area (minus significant areas of water) of that entire precinct. Column 4 is the SQ KM measured in that precinct that will receive a 60dbu signal from the proposed FM. Column 5 is the pro-rated population. There are no significant areas of water within the 60dbu contour.

To pro-rate the population under the FCC rules, divide column 4 by column 3 then multiply by column 2 to get the final pro-rated population in the 5<sup>th</sup> column.

<b><u>Census Subdivision</u></b>	<b><u>Total SubDivision Population</u></b>	<b><u>Total Subdivision SQ KM minus water</u></b>	<b><u>60dbu SQ KM</u></b>	<b><u>60dbu Population</u></b>
Driftwood precinct, Hitchcock County, NE	18	90.7	6.2	1
Culbertson precinct, Hitchcock County, NE	800	94.0	94.0	800
Grant precinct, Hitchcock County, NE	39	94.3	28.2	12
Riverside precinct, Hitchcock County, NE	123	93.2	73.3	97
Pleasant Hill precinct, Hitchcock County, NE	61	91.7	16.6	11
Blackwood precinct, Hitchcock County, NE	58	91.2	49.7	32
McCook city, Red Willow County, NE	7698	14.0	6.8	3728
Perry precinct, Red Willow County, NE	395	93.0	92.2	392
Coleman precinct, Red Willow County, NE	23	92.5	21.5	5
Driftwood precinct, Red Willow County, NE	95	87.3	74.9	82
Willow Grove precinct, Red Willow County, NE	598	91.9	8.9	58
Valley Grange, Red Willow County, NE	250	83.9	3.7	11
Logan Precint, Hitchcock County NE	40	93.8	93.8	40
<b>TOTALS:</b>			<b>569.8</b>	<b>5268</b>

### **Exhibit 3 FCC Section 73.525 Channel 6 Protection Study**

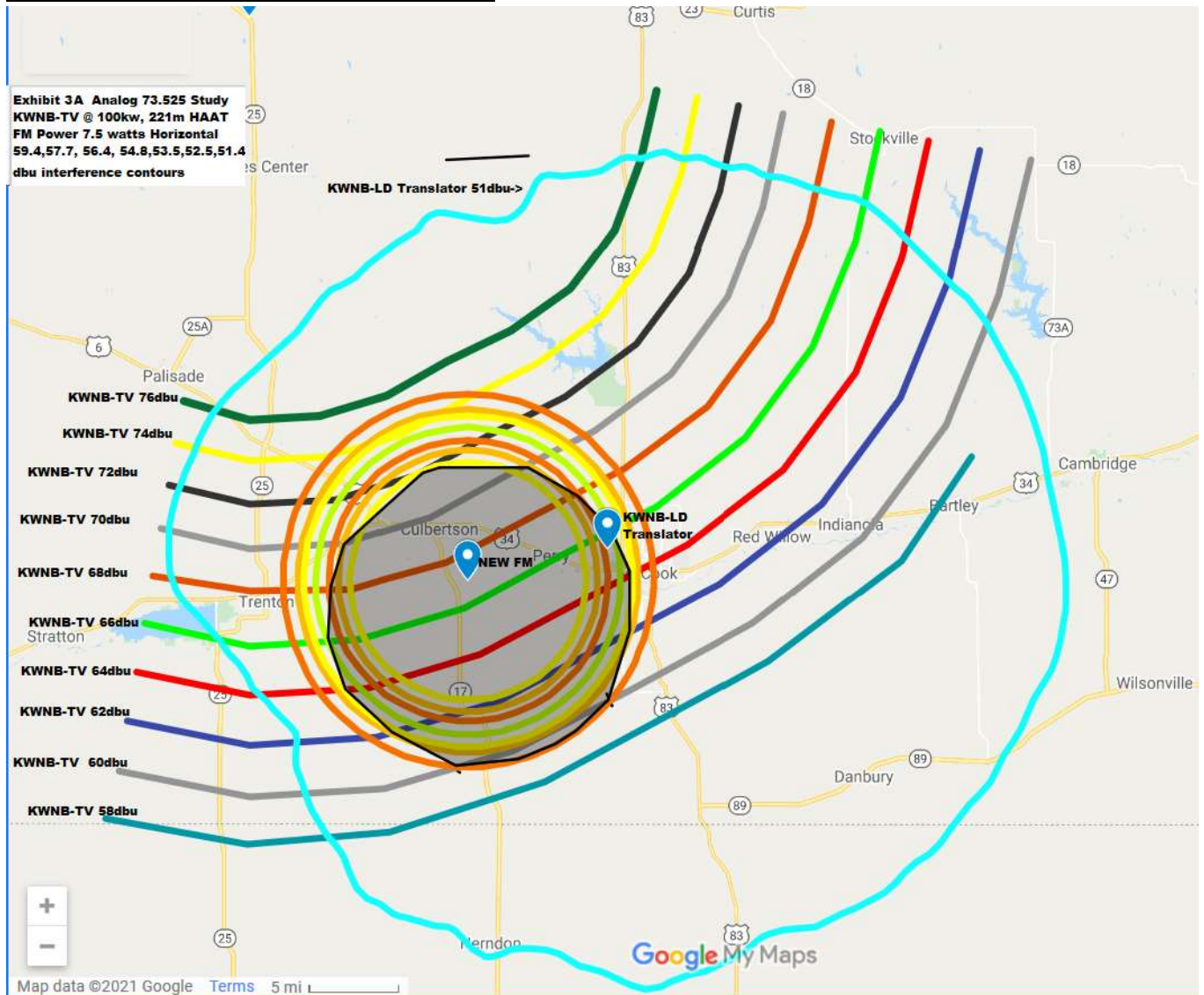
73.525(a)1 requires a minimum separation of 225km for channel 205.

There is one existing channel 6 operation at 51.83 km distance. KWNB-TV, Hayes Center, NE is affected by this proposal. KWNB uses a non-directional, horizontal only antenna from an HAAT of 221 meters above average terrain. The coordinates of KWNB are 40-37-32 and 101-01-47. KWNB-TV is now a DTV station licensed and with a construction permit to increase power from 11.9kw to 45kw from the same site.

Calculations for HAAT were made using data from the FCC 30 second database as shown in Exhibit 3C.

The construction permit for KWNB-TV provides for increased power and will result in an improved U/D ratio for the NEW FM, the resulting interference zone would be even smaller and contain fewer persons. According to FCC staff with respect to 73.525 compliance, we are to consider the full power analog operation of the DTV station on Channel 6, this would be operation at 100kw, 221meters HAAT. This is the power and HAAT used in the calculations for KWNB-TV. Since the proposed FM is applying to operate with 300 watts Vertical only, and as there are no population centers of over 50,000 persons involved, we used the allowed  $1/40^{\text{th}}$  of the vertical power, or 7.5 watts for horizontal power calculations for the New FM.

### EXHIBIT 3A KWNB Analog Interference Study

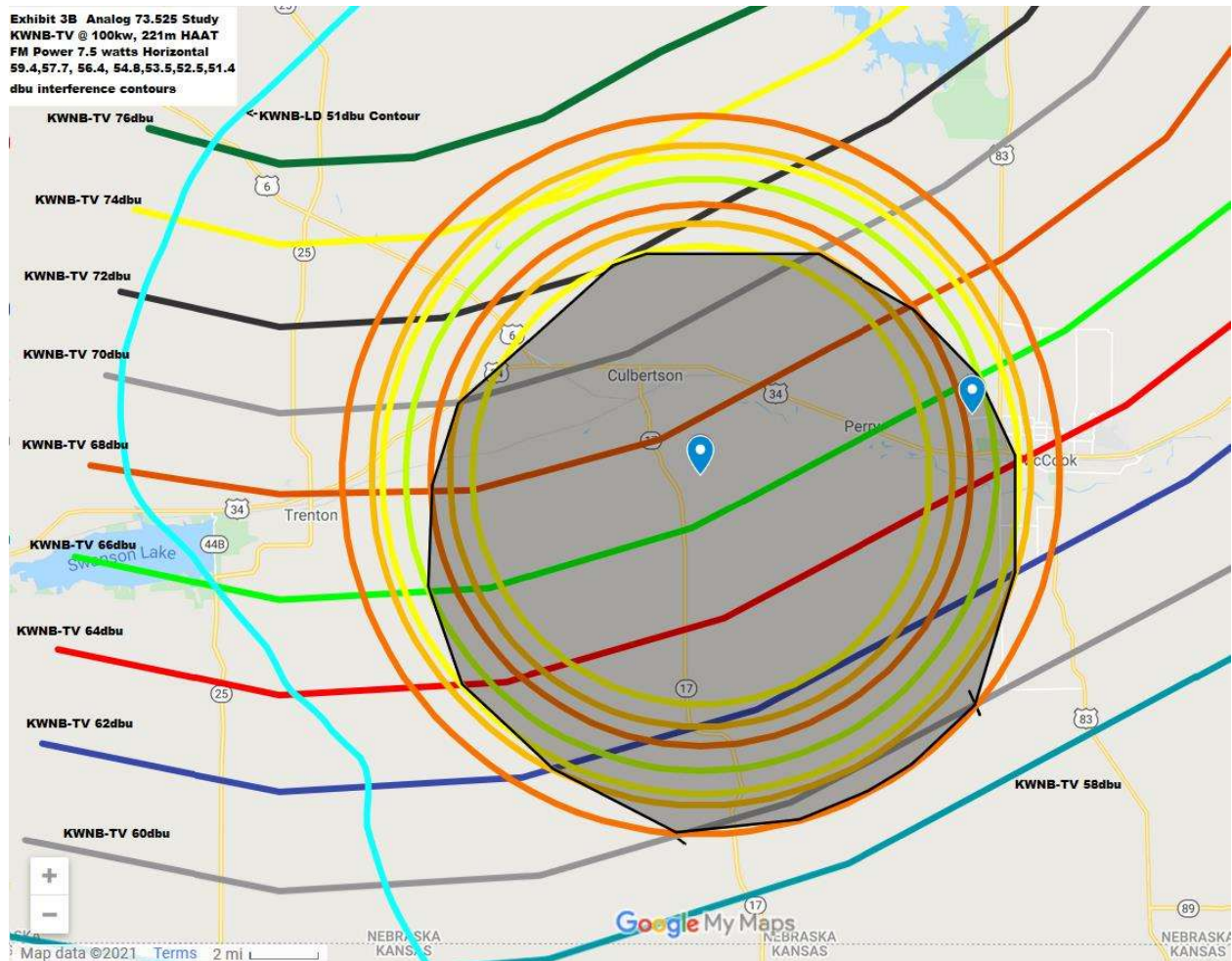


As shown in this exhibit there are overlapping interference contours. The applicant counts 2,206 persons within the Interference Nexus using the 100kw analog method of calculation for KWNB-TV. This is under the 3000 allowed. The population counts were done in accordance with FCC procedure, taking US Census subdivision block maps and interpolating for county subdivisions where 100% was not covered.

Additionally, KWNB-TV operates KWNB-LD, a 4.7 kw translator which rebroadcasts KWNB-TV 100% from McCook, NE. The interference areas imagined by this application are fully covered by coverage of this translator which puts affected population back to zero. The interference areas are well within the 51dbu coverage area of the KWNB-LD translator in McCook, NE as shown on various Exhibit 3 maps. The translator transmitter is physically located within the Ch 6 interference area so signal strength should be more than sufficient everywhere for reception from the translator.



### EXHIBIT 3B KWNB Analog Interference Study, Closeup



The complete population count by US Census subdivision block for this study is detailed in Exhibit 3E.

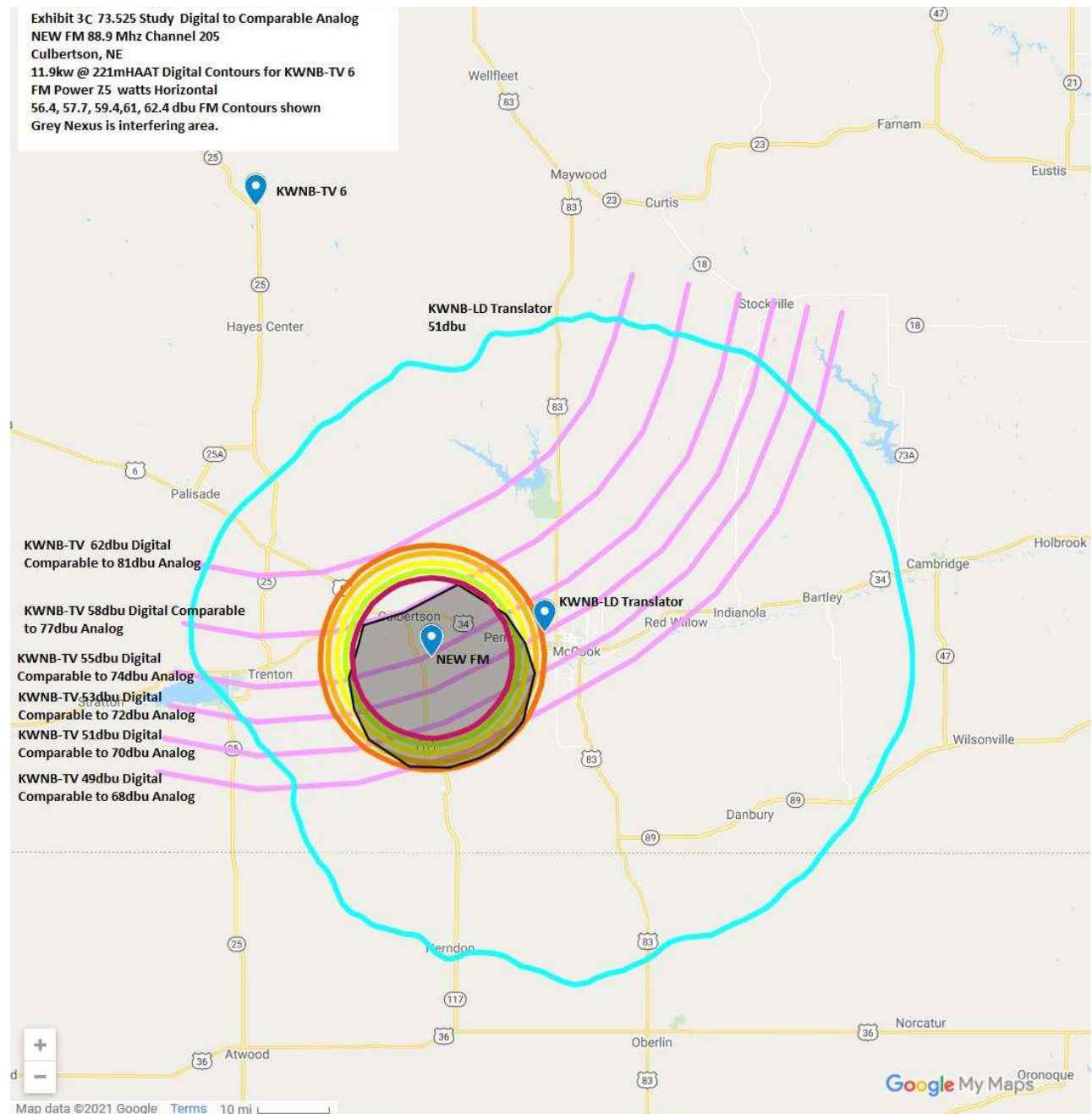
**Figure 4 FM to Channel 6 Ratio (U/D) for Just Perceptible Interference**

Channel 6 Analog, Digital Comparable & Channel 205 U/D per FCC 73.599

Channel 6 Digital Contour	Channel 6 Contour	Value from 73.599 Figure 1	Channel 205 Contour	Channel 6 Digital Contour	Channel 6 Contour	Value from 73.599 Figure 1	Channel 205 Contour
28	47 (Grade B)	-3	44	49	68 (Grade A)	-11.6	56.4
29	48	-3.4	44.6	50	69	-11.9	57.1
30	49	-3.9	45.1	51	70	-12.3	57.7
31	50	-4.4	45.6	52	71	-12.1	58.9
32	51	-4.8	46.2	53	72	-12.6	59.4
33	52	-5.4	46.6	54	73	-12.8	60.2
34	53	-5.7	47.3	55	74	-13	61
35	54	-6.3	47.7	56	75	-13.5	61.5
36	55	-6.6	48.4	57	76	-13.6	62.4
37	56	-7	49	58	77	-13.9	63.1
38	57	-7.5	49.5	59	78	-14	64
39	58	-7.9	50.1	60	79	-14.7	64.3
40	59	-8.4	50.6	61	80	-14.5	65.5
41	60	-8.6	51.4	62	81	-14.9	66.1
42	61	-9.1	51.9	63	82	-15	67
43	62	-9.5	52.5	64	83	-15.1	67.9
44	63	-9.6	53.4	65	84	-15.2	68.8
45	64	-10.5	53.5	66	85	-15.2	69.8
46	65	-10.8	54.2	67	86	-15.4	70.6
47	66	-11.2	54.8	68	87	-15.6	71.4
48	67	-12	55	69	88	-15.8	72.2
				70	89	-16	73
				71	90	-16.1	73.9

The actual method the FCC staff uses to do the present day 73.525 study remains a mystery. I dug up several older applications and found a footnote where the FCC said a study submitted in an application “most closely” resembled the study staff uses at the FCC. This study converted the digital service contours to analog. I.E. 28dbu service contour digital corresponds to 47 dbu (grade B) Analog TV contours. This was also studied and shown in Exhibits 3C and 3D. This gave a much lower number of affected population, some 941 persons. Either way, we are well under 3000 persons and since the Translator KWNB-LD counts, it completely offsets all persons affected.

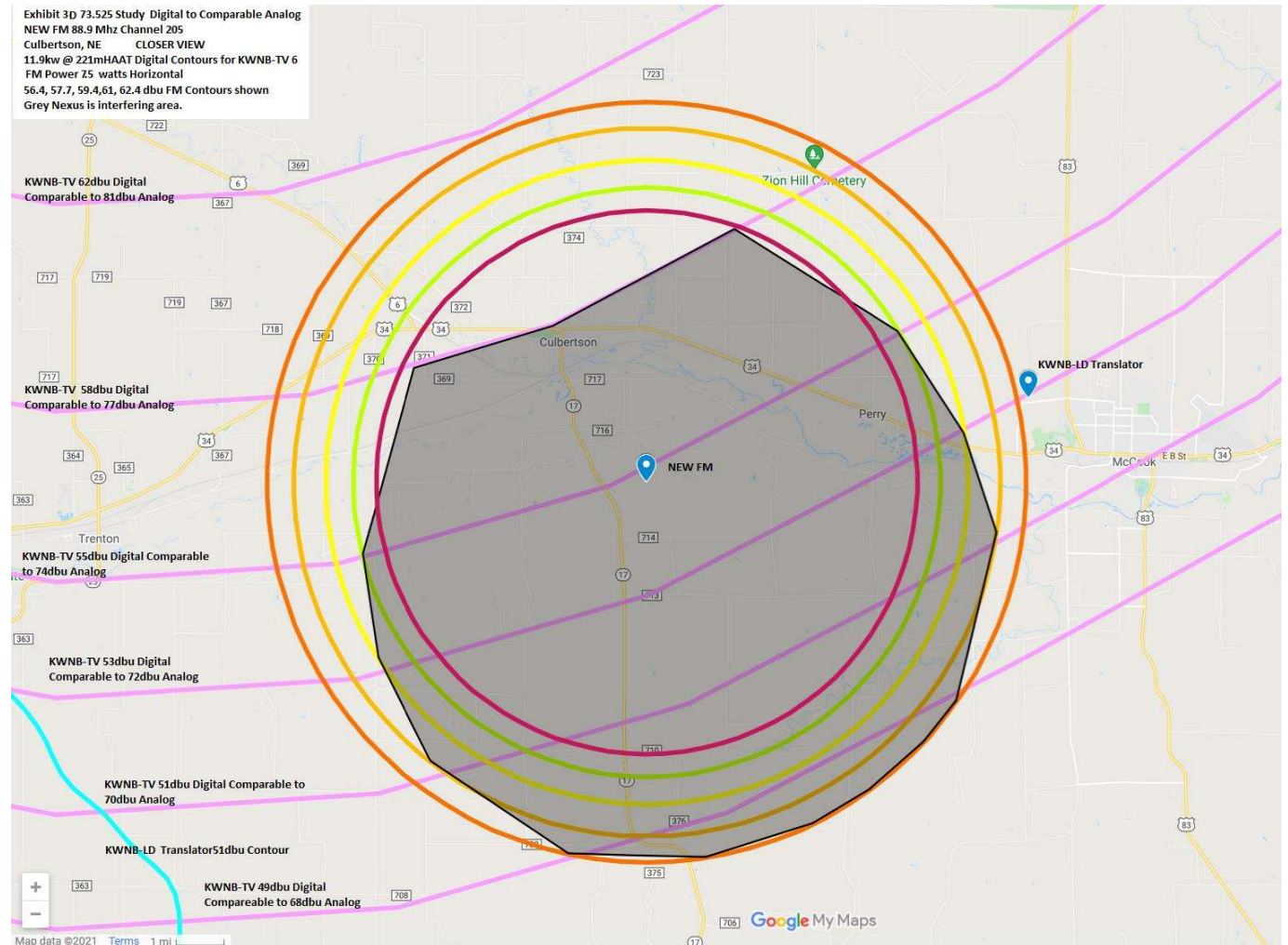
### Exhibit 3C Digital to Comparable Analog study 73.525



Fm Power is at 7.5 watts on all of the 73.525 study maps. KWNB-TV Power is at 11.9KW their current authorized digital power. They have a permit to increase power to 45KW. This would make the area of interference even less by pushing out the KWNB-TV Contours further.



### Exhibit 3D Digital to Comparable Analog study 73.525 Closeup



**EXHIBIT 3, Continued**

Here then is the Channel 6 interference population study using the 2010 US Census. The 1st column shows the US Census subdivision name. Only Census Subdivision precincts within the coverage area of interference shown on the maps in Exhibit 3 are shown. Column 2 and 3 then shows the interpolated population of each precinct within the appropriate nexus depicted on the maps in Exhibit 3. Analog study Channel 6 interference population is 2,206, Digital study Channel 6 interference population is 941 persons.

<b><u>EXHIBIT 3E</u></b>		
<b>Census Subdivision</b>	<b>Analog Area Interference Population</b>	<b>Digital Area Interference Population</b>
Highland precinct, Hayes County, NE	6	0
Cornell precinct, Hitchcock County, NE	1	0
Driftwood precinct, Hitchcock County, NE	7	0
Culbertson precinct, Hitchcock County, NE	800	639
Grant precinct, Hitchcock County, NE	7	9
Logan precinct, Hitchcock County, NE	40	39
Riverside precinct, Hitchcock County, NE	56	20
McCook city, Red Willow County, NE	854	0
Perry precinct, Red Willow County, NE	343	183
Coleman precinct, Red Willow County, NE	1	0
Driftwood precinct, Red Willow County, NE	90	51
<b>TOTALS:</b>	<b>2206</b>	<b>941</b>



## EXHIBIT 3F KWNB-TV Terrain Data From FCC 30 Second Terrain Database

### *Antenna Height Above Average Terrain Calculations -- Results*

#### Input Data

Latitude **40° 37' 32"** North

Longitude **101° 1' 47"** West (NAD83)

These coordinates convert to NAD 27 coordinates of  
40° 37' 31.98", North, 101° 01' 45.44" West (NAD 27).

Height of antenna radiation center above mean sea level: **1160** meters AMSL

Number of Evenly Spaced Radials = **36**      0° is referenced to True North

#### *Results*

Calculated HAAT = **225 meters**

Antenna Height Above Average Terrain calculated  
using FCC 30 second terrain database (continental USA only)

#### Individual "Radial HAAT" Values, in meters

0°	224.2 m	180°	240.9 m
10°	218.1 m	190°	229.5 m
20°	227.7 m	200°	232.1 m
30°	229.1 m	210°	235.8 m
40°	235.0 m	220°	220.4 m
50°	235.6 m	230°	222.6 m
60°	237.7 m	240°	219.1 m
70°	238.4 m	250°	207.8 m
80°	243.9 m	260°	200.9 m
90°	245.8 m	270°	191.6 m
100°	246.7 m	280°	185.7 m
110°	253.9 m	290°	186.6 m
120°	267.8 m	300°	193.5 m
130°	265.1 m	310°	194.6 m
140°	251.5 m	320°	183.2 m
150°	234.6 m	330°	191.8 m
160°	241.9 m	340°	194.0 m
170°	244.7 m	350°	211.9 m

## **EXHIBIT 4**

### **Environmental Statement**

The proposed tower was built in the 1980s and is in the FCC ASR database as # 1316688. It is owned by Jerrell (Jerry) Kautz of 8006 Roos Road, Houston, TX 77036. At this time, Aeronautical study 2020-ACE-4916 has been given a no-hazard by the FAA. This tower has had no known licensed antennas for over 40 years. There will be no environmental change whatsoever by adding a 9' tall broadcast antenna side mounted on top of the tower such that the HAAT will be 100 meters HAAT.

### **RF Electromagnetic Exposure Analysis NEW FM calculation on 88.9 Mhz 300 Watts Vertical Only**

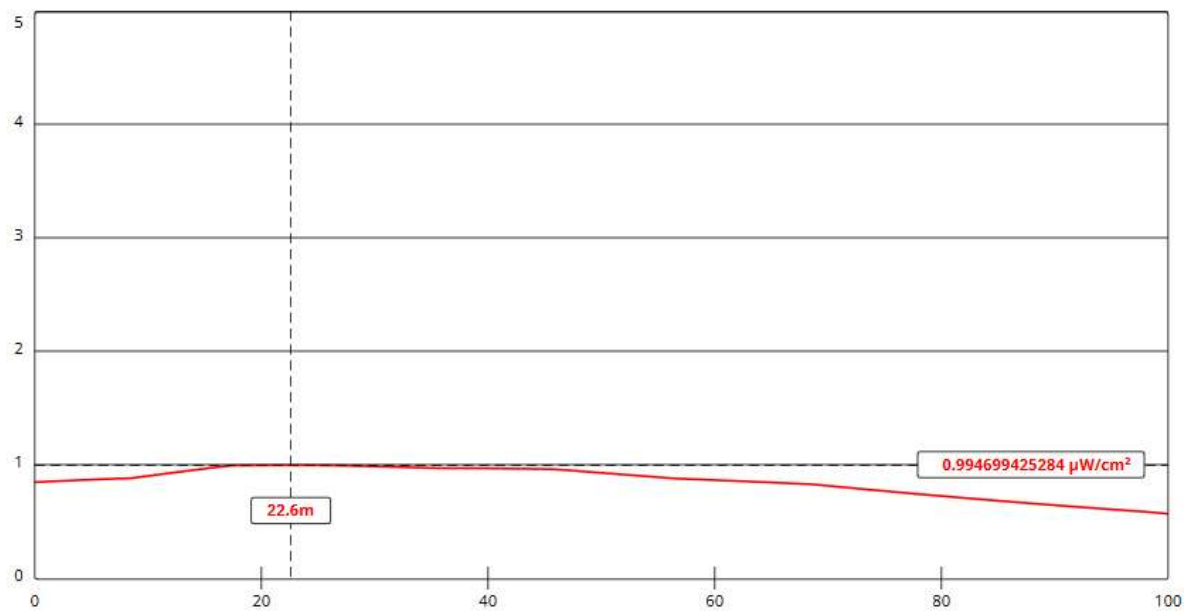
The Proposed FM antenna is a Norwalk Dominator NWE34 1 bay or comparable Vertical only antenna. This will be side mounted at the top of the existing tower of 180' height. Using the FCC calculator for 300 watts Vertical and selecting a Type 1 antenna the FCC FM Model calculator predicts 1 microwatts per square centimeter squared at a distance of 30 meters from the tower base and 6 feet (2 meters) above ground.

This is 0.005 of the controlled maximum and 0.001 of the uncontrolled maximum.

The tower is located in a limited, no-public-access area, restricted by gates and locks. It is a farm prairie area with no residences within ½ mile. Signs will be posted warning of the radiation hazard and procedures will be setup to protect workers who must climb the tower. This can include reducing operating power or turning off the transmitter to ensure that workers will not be exposed to excessive radiation levels. Applicant will do additional exposure analysis if the FCC thinks it to be necessary including actual measurements where possible.

Vertical only antennas have notoriously small downward radiation by virtue of their design.

**From the FCC Model Program:**



View Tabular Results +

Channel Selection	Channel 205 (88.9 MHz) ▾		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other" ▾		
Height (m)	<input type="text" value="100"/>	Distance (m)	<input type="text" value="100"/>
ERP-H (W)	<input type="text" value="0"/>	ERP-V (W)	<input type="text" value="300"/>
Num of Elements	<input type="text" value="1"/>	Element Spacing (λ)	<input type="text" value="1"/>
Num of Points	<input type="text" value="500"/>	<input type="button" value="Apply"/>	

**Exhibit 4, Cont. Tabulated from the FM Model Program:**

27.2	1.0
27.4	1.0
27.6	1.0
27.8	1.0
28	1.0
28.2	1.0
28.4	1.0
28.6	1.0
28.8	1.0
29	1.0
29.2	1.0
29.4	1.0
29.6	1.0
29.8	1.0
30	1.0
30.2	1.0
30.4	1.0
30.6	1.0
30.8	1.0
31	1.0
31.2	1.0
31.4	1.0
31.6	1.0

Also in consideration is a nearby tower (ASR1004103) of 500' (153m) height approximately 375' (114meters) from this tower. Both towers are existing.

From the FM Application BRH - 20050201BDX for the co-owned FM stations on that tower we have the following excerpt with respect to radiation:

**EXHIBIT 4, Cont.**

**FROM APPLICATION BRH-20050201BDX:**

**Exhibit 15**

**Description:** KIOD RF STATEMENT FOR 2005 LICENSE RENEWAL

THE FOLLOWING INFORMATION PERTAINS TO STATION KIOD, MCCOOK, NE.

KIOD IS LOCATED ON A MULTIPLE FM USE TOWER WITH KSWN. KIOD OPERATES ON FM CHANNEL 287 (105.3 MHZ) WITH EFFECTIVE RADIATED POWER (ERP) OF 100 KW (H & V) AND UTILIZES A COMMON 12 BAY FM ANTENNA WITH 1.0 WAVELENGTH INTER-BAY SPACING. KSWN OPERATES ON FM CHANNEL 230 (93.9 MHZ) WITH EFFECTIVE RADIATED POWER (ERP) OF 50 KW (H & V) AND UTILIZES A COMMON 6 BAY FM ANTENNA WITH 1.0 WAVELENGTH INTER-BAY SPACING. THE KIOD CENTER OF RADIATION (COR) IS 136 METERS AGL. THE KSWN CENTER OF RADIATION (COR) IS 105 METERS AGL. SINCE KIOD IS CO-LOCATED WITH FM STATION KSWN, THE INDIVIDUAL AND COMBINED RF DENSITY AT GROUND LEVEL IS CALCULATED.

USING THE MODIFIED OET BULLETIN 65 AND SUPPLEMENT A CALCULATIONS ALONG WITH THE FM MODEL PROGRAM OBTAINED OFF THE FCC WEBSITE, THE POWER DENSITY OF THE FM FACILITY AT THE BASE OF THE TOWER IS 33.4 MICROWATTS PER CENTIMETER SQUARED, OR 3.34% OF THE RECOMMENDED LIMIT OF 1000 MICROWATTS PER CENTIMETER SQUARED IN THE CONTROLLED ENVIRONMENT, AND 16.7% IN THE NON CONTROLLED ENVIRONMENT, WELL WITHIN THE ANSI RECOMMENDED LIMITS.

Based upon this, and the FM model output accurate with respect to our proposed FM antenna we are within range of the uncontrolled access and controlled access for the entire site.

After construction of this facility, should the FCC desire we would be more than happy to have the area professionally measured by a qualified entity to insure that radiation levels are within limits.

The existing antennas are at 136m and 105m height above ground and our antenna will be located at 56.25 m height above ground some 114 meters distant.



**EXHIBIT 5 - Letter from Tower Owner**

October 1, 2021

Theatre Organ Preservation of NE

109 West 10<sup>th</sup> Street

McCook, NE 69001

This letter is to state that I am the owner of the 180' tower FCC ASR # 1316688 constructed in the 1980s and currently unutilized at the location of 40.190603 North Latitude and 100.807689 West Longitude. I have FAA under Aeronautical study 2020-ACE-4916 a determination which was issued a finding of no hazard as the tower was already existing

The Theatre Organ Preservation of NE has my permission to locate an FM broadcast antenna on this tower when a construction permit is granted.

Sincerely,

A handwritten signature in black ink, appearing to read "Jerry Kautz". The signature is fluid and cursive, with the first name "Jerry" written in a larger, more prominent script than the last name "Kautz".

Jerrell (Jerry) Kautz

8006 Roos Rd

Houston, TX 77036

713-498-3381 (Cell)



Mail Processing Center  
Federal Aviation Administration  
Southwest Regional Office  
Obstruction Evaluation Group  
10101 Hillwood Parkway  
Fort Worth, TX 76177

Aeronautical Study No.  
2020-ACE-4916-OE

Issued Date: 08/20/2020

Jerry Kautz  
Jerry Kautz  
8006 Roos Rd  
Houston, TX 77036

**\*\* DETERMINATION OF NO HAZARD TO AIR NAVIGATION \*\***

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Antenna Tower Rohn 45G Culbertson, NE
Location:	Culbertson, NE
Latitude:	40-11-26.17N NAD 83
Longitude:	100-48-27.68W
Heights:	2808 feet site elevation (SE) 180 feet above ground level (AGL) 2988 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission (FCC) because the structure is subject to their licensing authority.

This determination cancels and supersedes prior determinations issued for this structure.

If we can be of further assistance, please contact our office at (816) 329-2527, or [marla.wierman@faa.gov](mailto:marla.wierman@faa.gov). On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ACE-4916-OE.

**Signature Control No: 444875432-448868268**

( DNE )

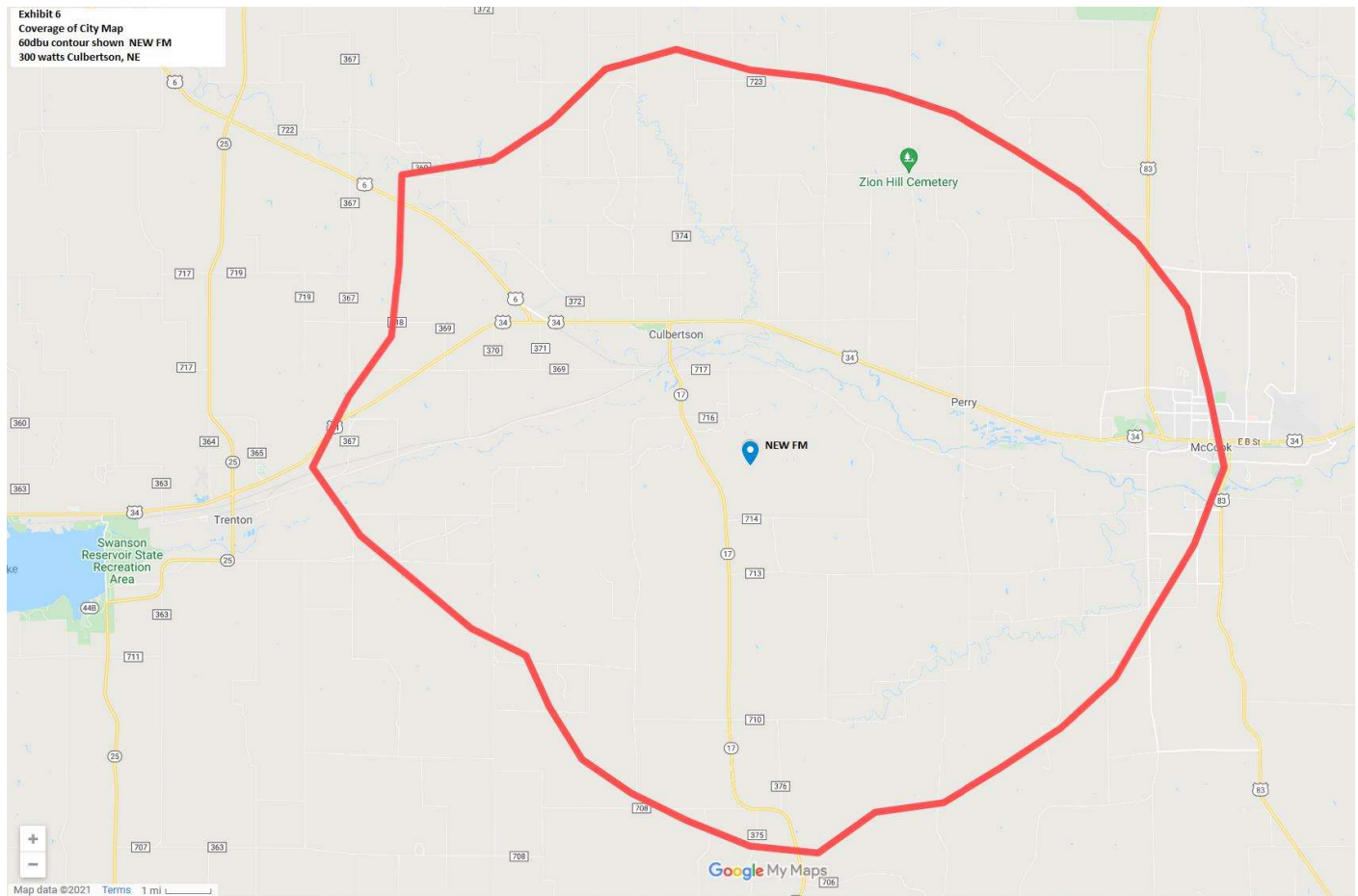
Marla Wierman  
Technician

Attachment(s)  
Frequency Data  
Map(s)

cc: FCC

## Exhibit 6

### 60 dbu Coverage of Community of License per 73.515(a)



This map shows the NEW FM 60dbu contour completely passes over the village of Culbertson city limits.

**Exhibit 7 NEW FM Culbertson, NE****Calculations to 54, 60 and 100 dbu contours.**

<b>Azimuth</b>	<b>HAAT</b>	<b>60dbu FCC 50/50</b>	<b>54dbu FCC 50/10</b>	<b>40dbu FCC 50/10</b>	<b>100dbu FCC 50/10</b>
360	98.7	13.36	20.03	45.99	1.22
350	112.2	14.26	21.51	48.53	1.22
340	112.0	14.25	21.49	48.5	1.22
330	99.4	13.41	20.11	46.14	1.22
320	100.5	13.48	20.24	46.36	1.22
310	128.9	15.31	23.06	50.96	1.22
300	103.0	13.65	20.52	46.89	1.22
290	91.1	12.85	19.12	44.33	1.22
280	104.0	13.72	20.63	47.05	1.22
270	119.5	14.73	22.22	49.67	1.22
260	98.2	13.33	19.97	45.89	1.22
250	75.7	11.78	17.15	40.5	1.22
240	63.0	10.87	15.44	36.95	1.22
230	51.6	9.88	13.75	33.12	1.22
220	58.7	10.54	14.76	35.66	1.22
210	69.9	11.37	16.38	38.92	1.22
200	74.7	11.71	17.02	40.23	1.22
190	80.2	12.10	17.74	47.67	1.22
180	90.0	12.77	18.98	44.07	1.22
170	96.2	13.20	19.73	45.46	1.22
160	84.4	12.39	18.28	42.73	1.22
150	94.3	13.07	19.51	45.05	1.22
140	96.3	13.20	19.75	45.48	1.22
130	103.2	13.67	20.54	46.9	1.22
120	111.4	14.21	21.43	48.4	1.22
110	114.7	14.42	21.76	48.94	1.22
100	126.9	15.18	22.88	50.69	1.22
90	138.6	15.96	23.93	52.29	1.22
80	134.0	15.65	23.52	51.66	1.22
70	134.2	15.66	23.53	51.69	1.22
60	125.1	15.07	22.72	50.44	1.22
50	114.7	14.42	21.76	48.94	1.22
40	106.8	13.91	20.9	47.58	1.22
30	103.8	13.71	20.61	47.01	1.22
20	99.7	13.43	20.15	46.2	1.22
10	97.5	13.28	19.89	45.74	1.22



**EXHIBIT 8 Tower Availability**

The tower is owned by Jerrell (Jerry) Kautz of Houston, TX. A letter (Exhibit 5) is attached stating that the tower is available for use by the Theatre Organ Preservation of NE applicant.

**Qualifications of Jerrell E. Kautz**

Jerrell E. Kautz has done the technical exhibits for many applications submitted to the FCC and later granted in both petitions for rulemaking for the TV and FM table of allotments and also for various AM, FM and TV applications for new stations.

Jerrell E. Kautz has held a First Phone License issued by the FCC in 1976 P1-15-15320 later replaced by a General license.

Jerrell E. Kautz has worked in the broadcast technical field all of his life and was previously the holder of the license for KZMC FM in McCook. (1981-1983)

## Exhibit 9 Terrain Data for NEW FM from FCC database

### Antenna Height Above Average Terrain Calculations -- Results

#### Input Data

Latitude **40° 11' 26.17"** North

Longitude **100° 48' 27.68"** West (NAD 83)

These coordinates convert to NAD 27 coordinates of  
40° 11' 26.17", North, 100° 48' 26.12" West (NAD 27).

Height of antenna radiation center above mean sea level: **912.3** meters AMSL

Number of Evenly Spaced Radials = **36**      0° is referenced to True North

#### Results

Calculated HAAT = **100 meters**

Antenna Height Above Average Terrain calculated  
using FCC 30 second terrain database (continental USA only)

#### Individual "Radial HAAT" Values, in meters

0°	98.7 m	180°	90.0 m
10°	97.5 m	190°	80.2 m
20°	99.7 m	200°	74.7 m
30°	103.8 m	210°	69.9 m
40°	106.8 m	220°	58.7 m
50°	114.7 m	230°	51.6 m
60°	125.1 m	240°	63.0 m
70°	134.2 m	250°	75.7 m
80°	134.0 m	260°	98.2 m
90°	138.6 m	270°	119.5 m
100°	126.9 m	280°	104.0 m
110°	114.7 m	290°	91.1 m
120°	111.4 m	300°	103.0 m
130°	103.2 m	310°	128.9 m
140°	96.3 m	320°	100.5 m
150°	94.3 m	330°	99.4 m
160°	84.4 m	340°	112.0 m
170°	96.2 m	350°	112.2 m

## Exhibit 10 KPRD, HAYS, KS HAAT TERRAIN DATA

### Antenna Height Above Average Terrain Calculations -- Results

#### Input Data

Latitude **38° 46' 16" North**  
Longitude **98° 44' 18.3" West (NAD 83)**

These coordinates convert to NAD 27 coordinates of  
38° 46' 15.96", North, 98° 44' 17.02" West (NAD 27).

Height of antenna radiation center above mean sea level: **744 meters AMSL**

Number of Evenly Spaced Radials = **36**      0° is referenced to True North

#### Results

**Calculated HAAT = 194 meters**

Antenna Height Above Average Terrain calculated  
using FCC 30 second terrain database (continental USA only)

#### Individual "Radial HAAT" Values, in meters

0°	201.1 m		
10°	199.5 m		
20°	207.2 m		
30°	207.5 m		
40°	207.8 m	210°	170.5 m
50°	220.7 m	220°	181.7 m
60°	227.9 m	230°	179.9 m
70°	226.4 m	240°	178.7 m
80°	219.7 m	250°	185.1 m
90°	196.9 m	260°	191.5 m
100°	191.4 m	270°	203.7 m
110°	188.5 m	280°	218.2 m
120°	182.7 m	290°	209.2 m
130°	179.3 m	300°	203.8 m
140°	177.0 m	310°	207.6 m
150°	173.2 m	320°	204.1 m
160°	173.1 m	330°	194.0 m
170°	168.9 m	340°	193.9 m
180°	174.0 m	350°	202.7 m
190°	168.7 m		
200°	163.7 m		

## Exhibit 11 KLNE Lexington, NE HAAT TERRAIN DATA

### **Antenna Height Above Average Terrain Calculations -- Results**

#### **Input Data**

Latitude **40° 23' 5" North**  
Longitude **99° 27' 31.4" West (NAD 83)**

These coordinates convert to NAD 27 coordinates of  
40° 23' 04.96", North, 99° 27' 30.03" West (NAD 27).

Height of antenna radiation center above mean sea level: **1008 meters** AMSL

Number of Evenly Spaced Radials = **36**      0° is referenced to True North

#### **Results**

**Calculated HAAT = 301 meters**

Antenna Height Above Average Terrain calculated  
using FCC 30 second terrain database (continental USA only)

#### **Individual "Radial HAAT" Values, in meters**

0°	285.9 m	190°	321.1 m
10°	293.0 m	200°	320.6 m
20°	294.8 m	210°	317.8 m
30°	296.5 m	220°	319.7 m
40°	298.6 m	230°	317.4 m
50°	299.7 m	240°	314.4 m
60°	301.1 m	250°	311.4 m
70°	301.3 m	260°	304.8 m
80°	301.5 m	270°	299.2 m
90°	305.8 m	280°	288.1 m
100°	306.4 m	290°	284.8 m
110°	308.1 m	300°	278.6 m
120°	310.9 m	310°	275.1 m
130°	315.3 m	320°	271.1 m
140°	309.9 m	330°	272.0 m
150°	308.7 m	340°	278.0 m
160°	310.7 m	350°	281.3 m
170°	314.4 m		
180°	311.3 m		

## EXHIBIT 12 KJTF HAAT Terrain Data Used

### Antenna Height Above Average Terrain Calculations -- Results

#### Input Data

Latitude **49° 59' 49"** North

Longitude **100° 52' 48.5"** West (NAD83)

These coordinates convert to NAD 27 coordinates of  
49° 59' 49.00", North, 100° 52' 46.96" West (NAD 27).

Height of antenna radiation center above mean sea level: **1094** meters AMSL

Number of Evenly Spaced Radials = **36**      0° is referenced to True North

#### Results

Calculated HAAT = **874 meters**

Antenna Height Above Average Terrain calculated  
using FCC 30 second terrain database (continental USA only)

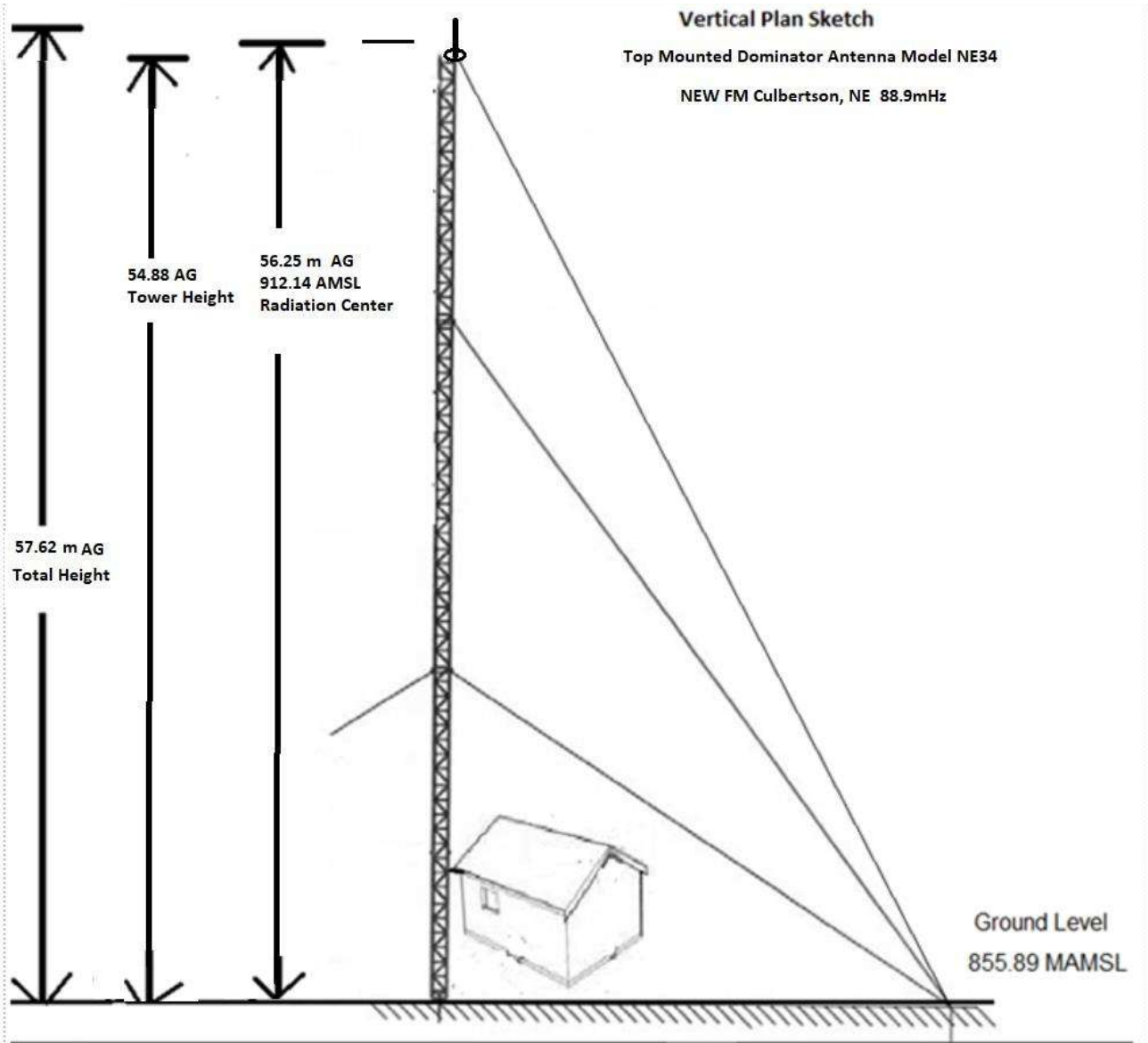
#### Individual "Radial HAAT" Values, in meters

0°	1094.0 m	180°	680.4 m
10°	1094.0 m	190°	661.2 m
20°	1094.0 m	200°	650.4 m
30°	1094.0 m	210°	645.8 m
40°	1094.0 m	220°	639.6 m
50°	1094.0 m	230°	634.3 m
60°	1094.0 m	240°	631.8 m
70°	1094.0 m	250°	630.6 m
80°	1094.0 m	260°	630.0 m
90°	920.2 m	270°	918.7 m
100°	633.5 m	280°	1094.0 m
110°	634.1 m	290°	1094.0 m
120°	637.2 m	300°	1094.0 m
130°	635.9 m	310°	1094.0 m
140°	642.5 m	320°	1094.0 m
150°	650.3 m	330°	1094.0 m
160°	668.6 m	340°	1094.0 m
170°	712.2 m	350°	1094.0 m

**EXHIBIT 13 is Intentionally Blank**

## EXHIBIT 14 Vertical Plan Sketch

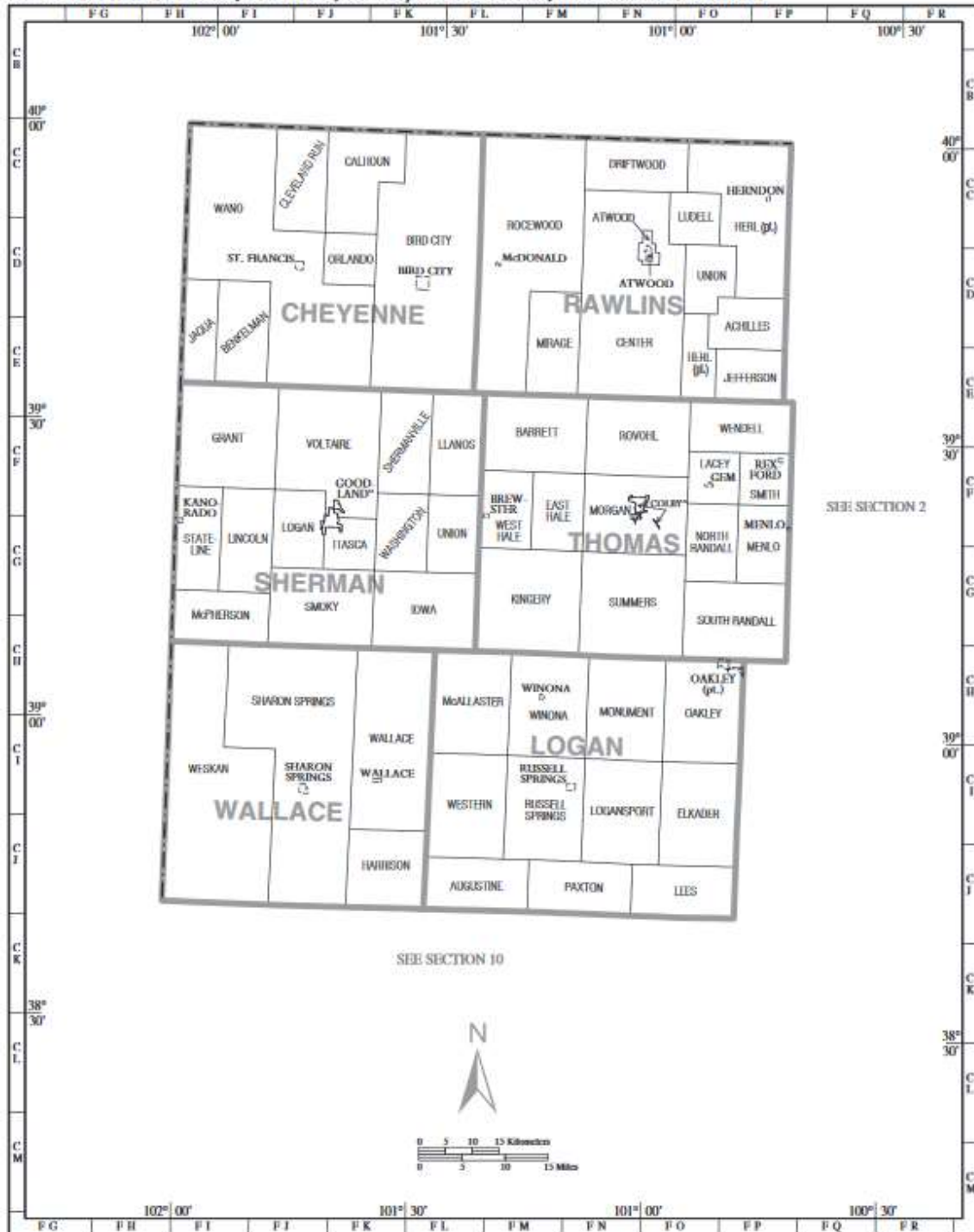
### New FM Culbertson, NE



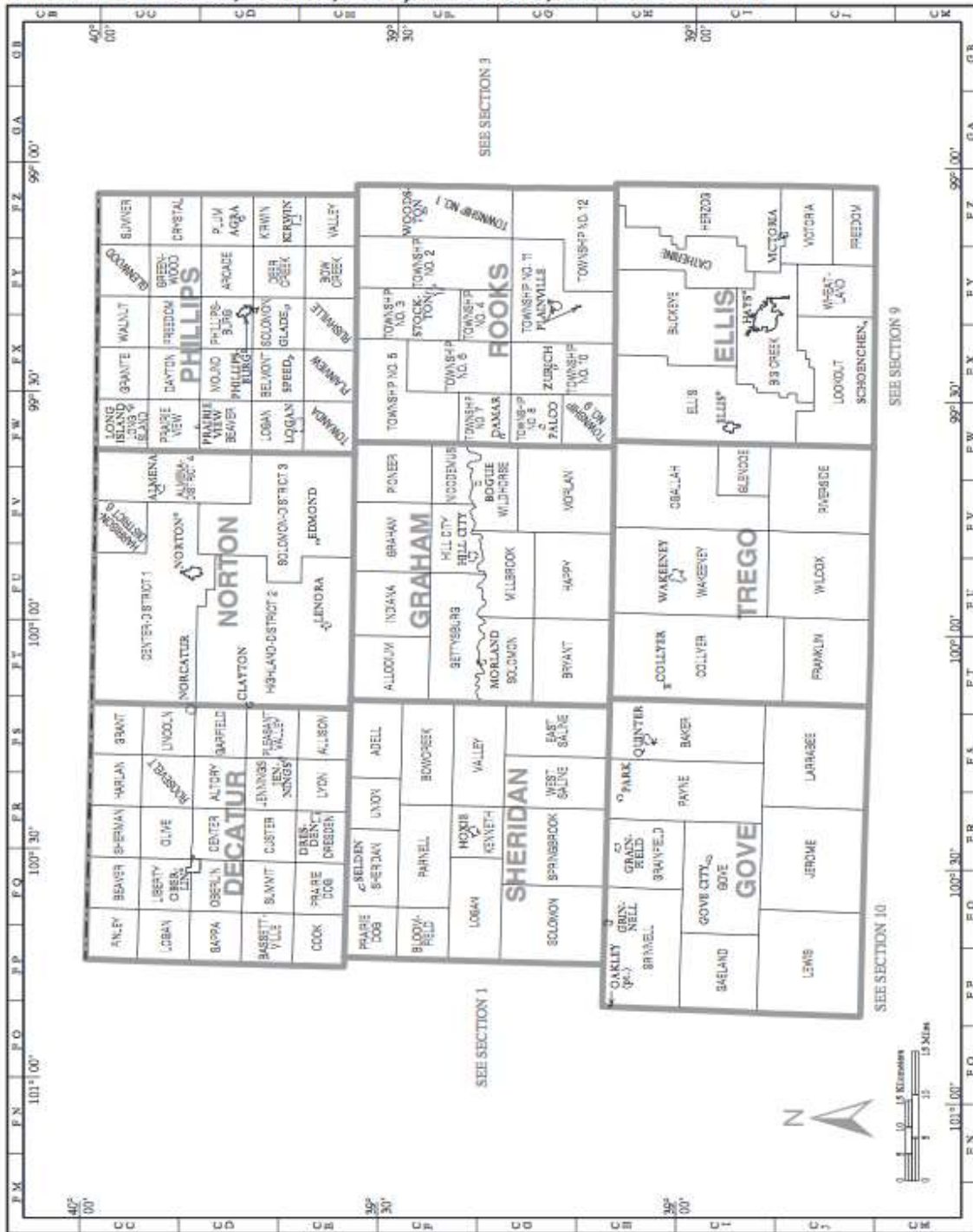




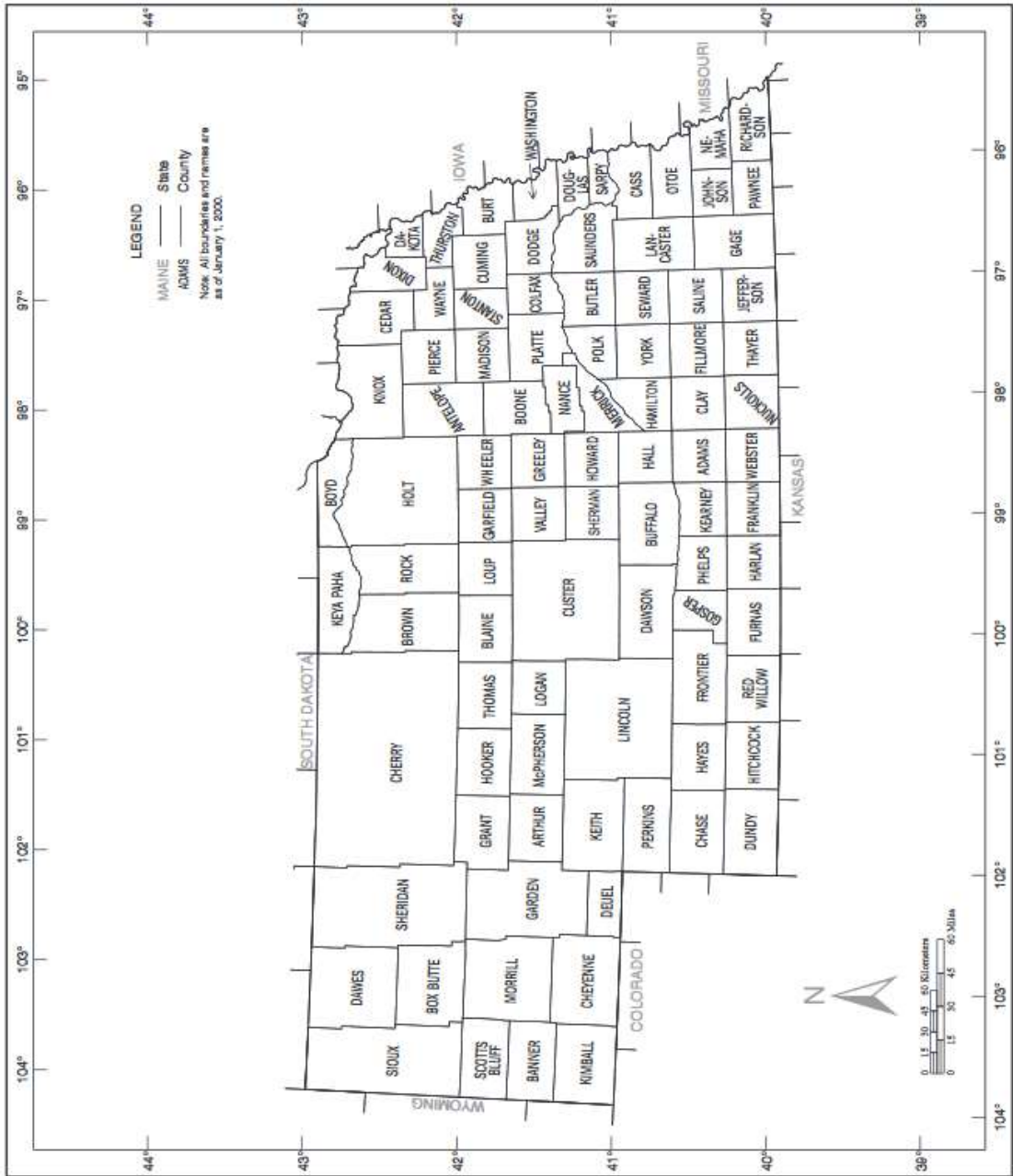
# American Indian Areas, Counties, County Subdivisions, and Places - Section 1



# American Indian Areas, Counties, County Subdivisions, and Places - Section 2



Nebraska County Subdivisions Maps





Map of the Fort Collins area showing county boundaries and names. The map includes a grid with coordinates (102° 00' to 100° 00' longitude, 41° 30' to 40° 00' latitude) and a scale bar (0 to 15 miles/kilometers). Major counties shown include McPHERSON, KEITH, LINCOLN, CHASE, DUNDY, HITCHCOCK, and RED WILLOW. Smaller counties like ARTHUR, LOGAN, PERKINS, and HAYES are also visible. The map is labeled "SEE SECTION 2" and "SEE SECTION 7".

[illegible]



## **EXHIBIT 16 NEW FM Culbertson, NE**

### **FCC FAIR DISTRIBUTION OF SERVICE (307(b)) STUDY FIRST AND SECOND NCE COVERAGE**

A search of the FCC records shows the following Non Commercial FM stations within 70 miles of Culbertson, NE or having coverage areas approaching the proposed FM 60dbu contour. This study excludes Class D and Translator stations. All Coverage of the proposed FM is First NCE coverage and covers some 569.8 SQ kM.

KZNK Brewster, KS

KLNE Lexington, NE

KPNE North Platte, NE

KSNB Norton, KS

KANA Hill City, KS

These station 60dbu contours are on Exhibit 16A.

The 60 dbu coverages taken from FCC records are shown on the map below. There is no overlapping 60dbu coverage with any station.

Populations were counted using the US Census Subdivision block maps. Subdivisions where there was less than 100% of coverage in any given count status were interpolated. I.E. if 25% area of a subdivision of 100 persons was covered then the count would be 25 persons.

**EXHIBIT 16 NEW FM Culbertson, NE, Continued**

Column 1 of this table shows that Census Block Subdivision's name. Column 2 shows the total population of the entire subdivision. 3<sup>rd</sup> column shows the total area in Square Kilometers in that subdivision. 4<sup>th</sup> Column shows the area within the 60dbu contour of the proposed station minus large areas of water (lakes) (However, There are no lakes in this area to exclude) The final column shows the population within the 60dbu contour counted by interpolation (Column4 divided by Column 3 times the population in column 2.

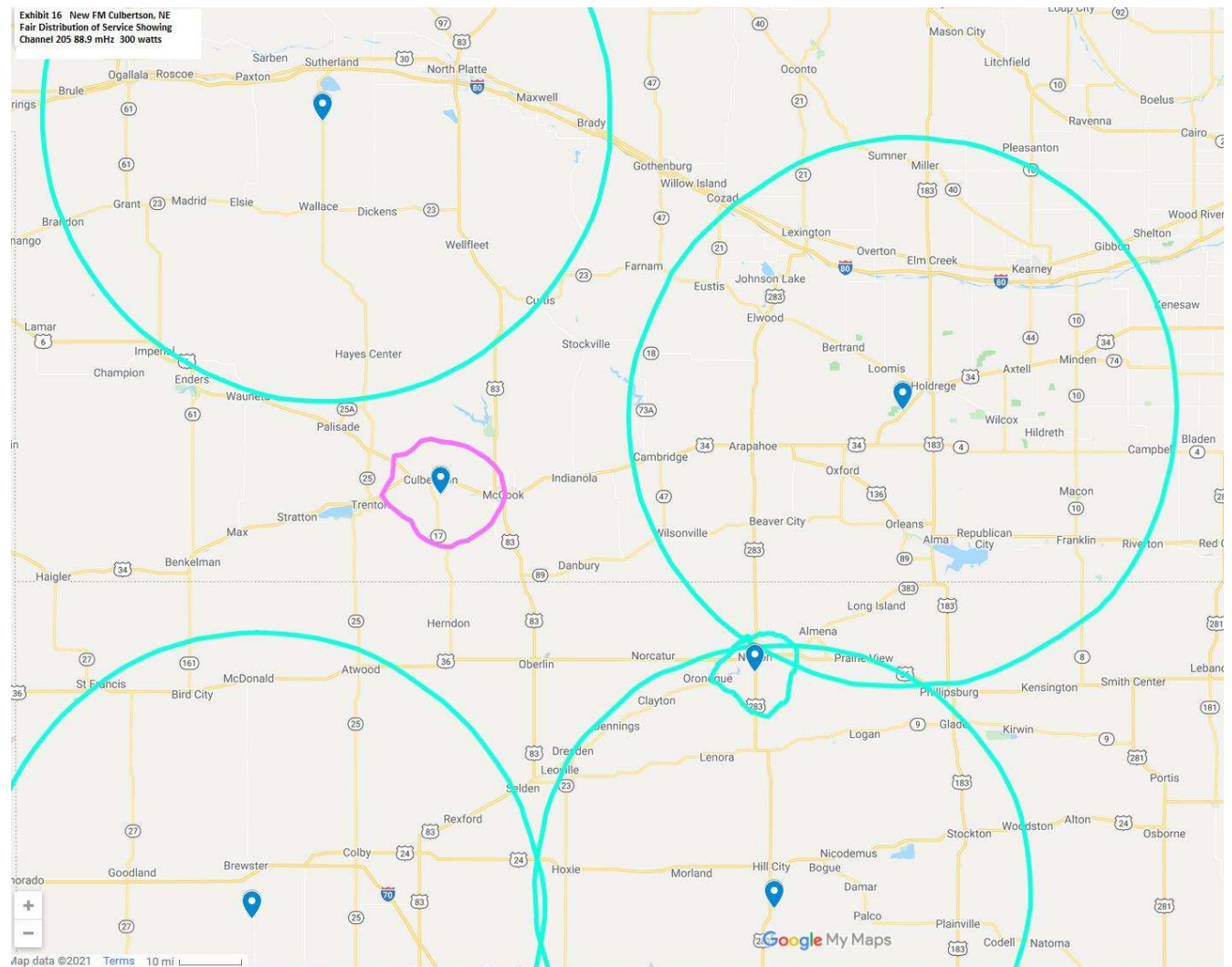
<u>Census Subdivision</u>	<u>Total SubDivision Population</u>	<u>Total Subdivision SQ KM minus water</u>	<u>60dbu SQ KM</u>	<u>60dbu Population</u>
Driftwood precinct, Hitchcock County, NE	18	90.7	6.2	1
Culbertson precinct, Hitchcock County, NE	800	94.0	94.0	800
Grant precinct, Hitchcock County, NE	39	94.3	28.2	12
Riverside precinct, Hitchcock County, NE	123	93.2	73.3	97
Pleasant Hill precinct, Hitchcock County, NE	61	91.7	16.6	11
Blackwood precinct, Hitchcock County, NE	58	91.2	49.7	32
McCook city, Red Willow County, NE	7698	14.0	6.8	3728
Perry precinct, Red Willow County, NE	395	93.0	92.2	392
Coleman precinct, Red Willow County, NE	23	92.5	21.5	5
Driftwood precinct, Red Willow County, NE	95	87.3	74.9	82
Willow Grove precinct, Red Willow County, NE	598	91.9	8.9	58
Valley Grange, Red Willow County, NE	250	83.9	3.7	11
Logan Precinct, Hitchcock County NE	40	93.8	93.8	40
<b>TOTALS:</b>			<b>569.8</b>	<b>5268</b>

100% of the coverage of the new FM is First NCE Service. A map is included of any other nearby NCE FM full service stations (not translators nor AM or LP stations) as Exhibit 16A

Complete US Census subdivision maps are included in Exhibit 15 of the technical exhibit for reference.

Since 100% of the 60dbu contour as shown on the map in Exhibit 16A this would mean first service for all, totaling some 5,268 persons. This is over the 2000 person threshold and qualifies the applicant for a First Service 307.(b) preference over all other applications.

## EXHIBIT 16A Map



The purple contour is the proposed FM 60dbu. The Blue contours are those of existing NCE FM stations nearby. All service for the new FM will be FIRST SERVICE.