



**OWL ENGINEERING & EMC TEST LABS, INC.**

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**CONSULTING COMMUNICATIONS ENGINEERS · EMC TEST LABORATORIES**

**5844 Hamline Avenue North, Shoreview, MN 55126  
651-784-7445 • Fax 651-784-7541**

**ENGINEERING EXHIBIT FOR A MINOR  
CHANGE APPLICATION FOR A  
TRANSLATOR K253AB  
PRAIRIE WINDS BROADCASTING  
FACILITY ID # 72908**

**CHANNEL 253 D 0.25 KW (H&V) 90 METERS HAAT**

**April 1, 2024**



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## **ENGINEERING STATEMENT**

This engineering exhibit, of which this Statement is a part, was prepared in accordance with the Rules and Regulations of the Federal Communications Commission and pursuant to the provisions of Section 111-B of FCC Form 349 on behalf of Prairie Winds Broadcasting, Inc. (Hereafter "**Prairie**") in support of an application for authority to modify an existing FM Translator (K253AB). This application proposes to modify the site location in order to eliminate coverage problems. The power output of 250 watts ERP and 53 meters HAAT will provide coverage for KGIM. This power/height combination is an allowable Class D facility permitted under the current Rules and Regulations.

The proposed facility will be located at a new owned tower. Engineering Figure 1 is a portion of the Watertown SE, SD 7.5-minute USGS map that shows the exact location of the antenna location. Figure 2 is an aerial view of the site. The applicant is aware of the provisions of §74.1203 of the FCC's Rules and the requirement for satisfying all complaints of interference that are received.

## **ALLOCATION CONSIDERATIONS**

A review of allotments and assignments on channel 253 on the three immediately upper adjacent, the three immediately lower adjacent channels show that the site proposed has no short-spaced conditions and fully complies with the Rules. Figure 3 shows the results of the allocation study and the results show compliance with §74.1204.

## **COVERAGE CONTOURS**

The three-to-sixteen-kilometer average terrain elevations were derived from the NGDC 30 -second terrain database.

The effective antenna radiation center height for each of the twelve standard 30-degree spaced radials was used in conjunction with the F (50, 50) metric curves of Figure 1 of §73.333 of the Rules to determine the distances to the 60 dBuV coverage contour



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DISTANCES TO CONTOURS (Kilometers):

Antenna COR elevation (AMSL): 460 meters      Average HAAT: 53 meters

Frequency: 98.5000 MHz

Coordinates: N 45° 25' 26.00"      W 98° 31' 2.00"

F(50,50) Curves      Number of Contours: 2

AZ (degs)	HAAT (m)	ERPd (kW)	CONTOUR LEVELS (dBuV):	
			70.0	60.0
0.0	55	0.2500	5.4	9.6
30.0	63	0.2500	5.8	10.3
60.0	64	0.2500	5.8	10.4
90.0	64	0.2500	5.8	10.4
120.0	64	0.2500	5.8	10.4
150.0	63	0.2500	5.8	10.3
180.0	66	0.2500	5.9	10.6
210.0	58	0.2500	5.5	9.9
240.0	52	0.2500	5.2	9.3
270.0	46	0.2500	4.9	8.7
300.0	41	0.2500	4.6	8.2
330.0	48	0.2500	5.1	9.0
360.0	55	0.2500	5.4	9.6

Figure 4 shows the 60 dBuV contours of the present and proposed site locations. As can be seen from this figure the 60 dBuV contours of the licensed and proposed site overlap and as such can be considered a minor change.

Figure 5 shows the proposed 60 dBuV contour and the 2 mv/m contour of KGIM. This figure shows that the proposed contour is all enclosed within the KGIM contour. This is fully compliant with 74.1201 (g).

Figure 6 shows the licensed and proposed coverage contours and that they over-lap allowing for this minor change.

### ANSI Power Density Calculations

The power density at the base of the tower was calculated using the following formula from OST Bulletin Number 65, August, 1997:



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$$S = \frac{0.64 \times 1.64 \times ERP \times 1000}{\pi(R^2)}$$

Where: S = power density in milliwatts per square centimeter  
ERP = effective radiated power in watts  
R = distance to radiation source in centimeters  
pi = 3.14

The site is considered to be a controlled site since access to the tower area will be restricted.

Using:

ERP = 0.50 KW (0.25 KW Vertical & 0.25 KW Horizontal)  
R = 6,200 cm.

Using this formula and the values shown below, a power density of 4.346  $\mu\text{W}/\text{cm}^2$  is found to exist at the base of the tower. This predicted value is 2.18% of the Public exposure limit.

Access to RF circuitry will be restricted since the antenna is mounted on a tower with a fence that restricts public access. Signs are posted warning of the potential danger. When persons require access to the site, tower or antenna for maintenance purposes, the transmitter power will be reduced or completely eliminated to comply with ANSI guidelines. Hence, the conditions of §1.1306(b)(3) would not be involved.

## **ENVIRONMENTAL IMPACT STATEMENT**

The instant proposal is categorically excluded from environmental processing since none of the conditions of §1.1306(b)(2) and (3) would be involved for the following reasons:

- 1) The site proposed is not in or near any location referenced in §1.1306(b)(1) as being of environmental interest.
- 2) The provisions of §1.1306(b)(2) relating to the use of high intensity strobe lighting do not apply since this tower is not utilizing this type of lighting.
- 3) Compliance to §1.1306(b)(3) regarding human exposure to RF radiation.



## CONCLUSIONS

Based on the engineering studies provided, the proposal is in complete conformance with all technical rules of the Federal Communications Commission.

A handwritten signature in black ink that reads "Garrett G. Lysiak". The signature is written in a cursive, flowing style.

Garrett G. Lysiak, P.E.

April 1 , 2024

(RICHMOND SW)

098° 32' 27.6129" W  
045° 26' 49.3628" N

(RICHMOND)

ABERDEEN WEST QUADRANGLE  
SOUTH DAKOTA  
TOPOGRAPHIC SERIES

(ORDWAY)

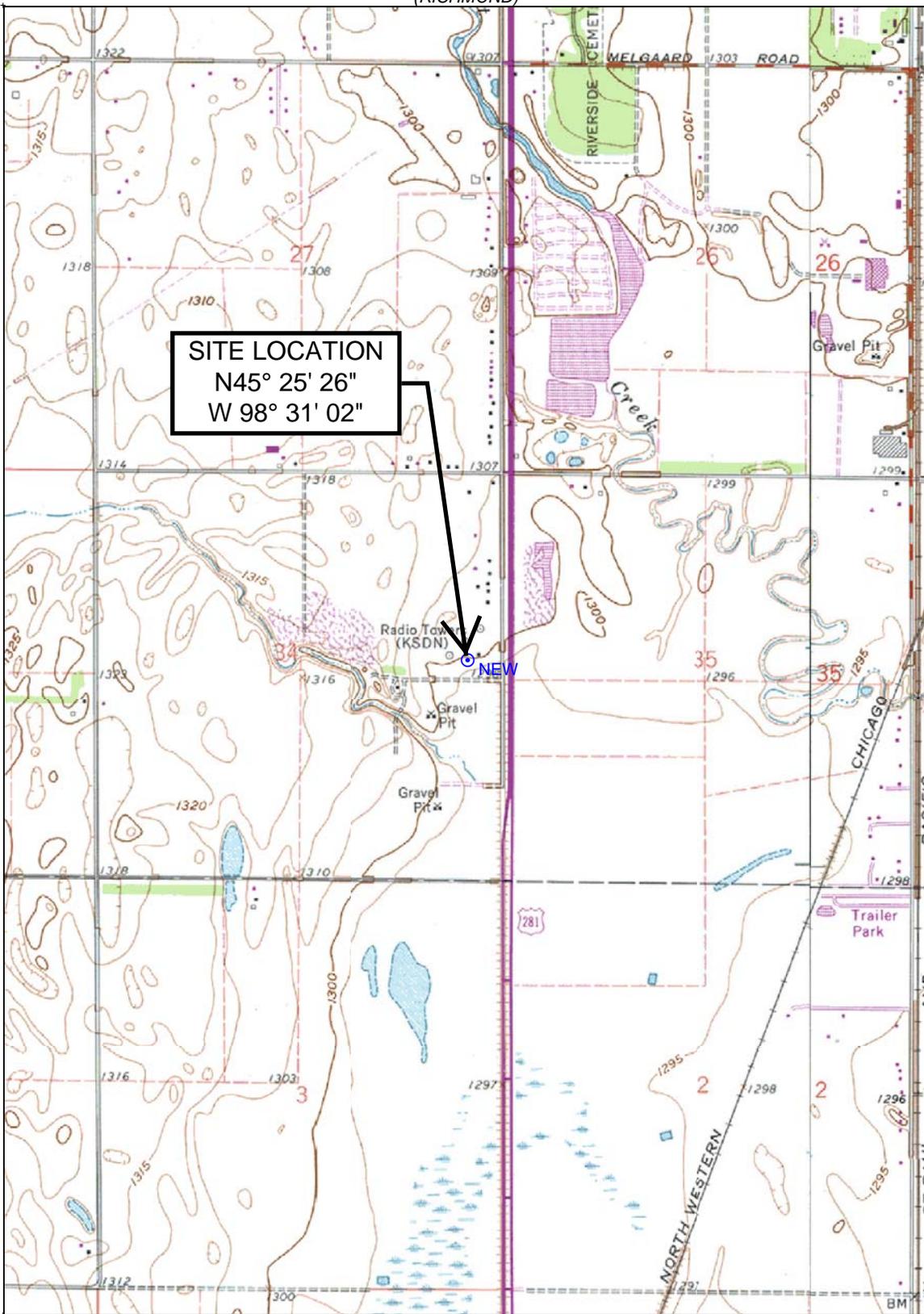
098° 29' 39.0588" W  
045° 26' 49.3628" N

(LAKE PARMLEY)

(ABERDEEN EAST)

(LAKE PARMLEY SW)

(WARNER)



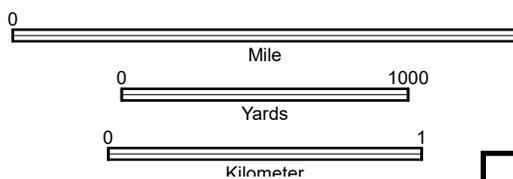
045° 24' 01.7765" N  
098° 32' 27.6129" W

045° 24' 01.7765" N  
098° 29' 39.0588" W

Declination



(RUDOLPH)  
SCALE 1:24000



CONTOUR INTERVAL 5 FT  
[BASE MAP VERTICAL DATUM]

ABERDEEN WEST, SD  
JAN 1, 1978

**FIGURE 1 - SITE MAP**



Sanderson Dr

Sanderson Dr

U.S. 281 Fwy

U.S. 281 Frontage Rd

Hwy 281

**NEW SITE**  
N 45° 25' 25.9"  
W 98° 31' 02.3"

**FIGURE 2 - AERIAL MAP**

200 ft

REFERENCE CH# 253D - 98.5 MHz, Pwr= 0.25 kW, HAAT= 61.5 M, COR= 458 M DISPLAY DATES  
 45 27 40.90 N. Average Protected F(50-50)= 10.29 km DATA 03-29-24  
 98 20 16.30 W. Omni-directional SEARCH 04-01-24

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*
253D Aberdeen	K253AB	LIC_CN SD		0.0 284.3	0.00 BLFT20050914AAB	45 27 40.90 98 20 16.30	0.250 62	458	---Reference---		Prairie Winds Broadcasting
256C2 Milbank	KXLG	LIC_CN SD		113.8 294.8	119.81 BLH20090928AFS	45 01 09.90 96 56 44.31	37.000 167	5.9 739	52.5 Tmrg Broadcasting, LLC	103.2	66.1
252C1 Ethan	KUQL	LIC_CN SD		181.8 1.8	189.20 BLH20090617ACE	43 45 33.00 98 24 45.30	100.000 273	104.5 714	71.9 Saga Communications Of Sou	74.3	103.0
252C1 Carrington	KXGT	LIC_CN ND		343.8 163.3	189.25 BMLH20181128AAH	47 05 37.99 99 02 12.41	100.000 264	101.8 782	69.5 I3g Media, Inc.	77.2	105.3
251D Milbank	K251CX	LIC_CN SD		110.1 291.1	113.03 0000144069	45 06 17.00 96 59 18.00	0.250 39	1.1 837	21.6 Prairie Winds Broadcasting	101.2	90.2
254C1 Moorhead	KLTA-FM	LIC_CN MN		42.1 223.4	196.72 BMLH20140826ABA	46 45 34.90 96 36 28.31	100.000 177	92.6 463	62.3 Radio Fargo-Moorhead, Inc.	93.4	119.6

Terrain database is FCC NGDC 30 Sec , 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= West Zone, Co to 3rd adjacent.  
 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.

**FIGURE 3 - ALLOCATION STUDY**

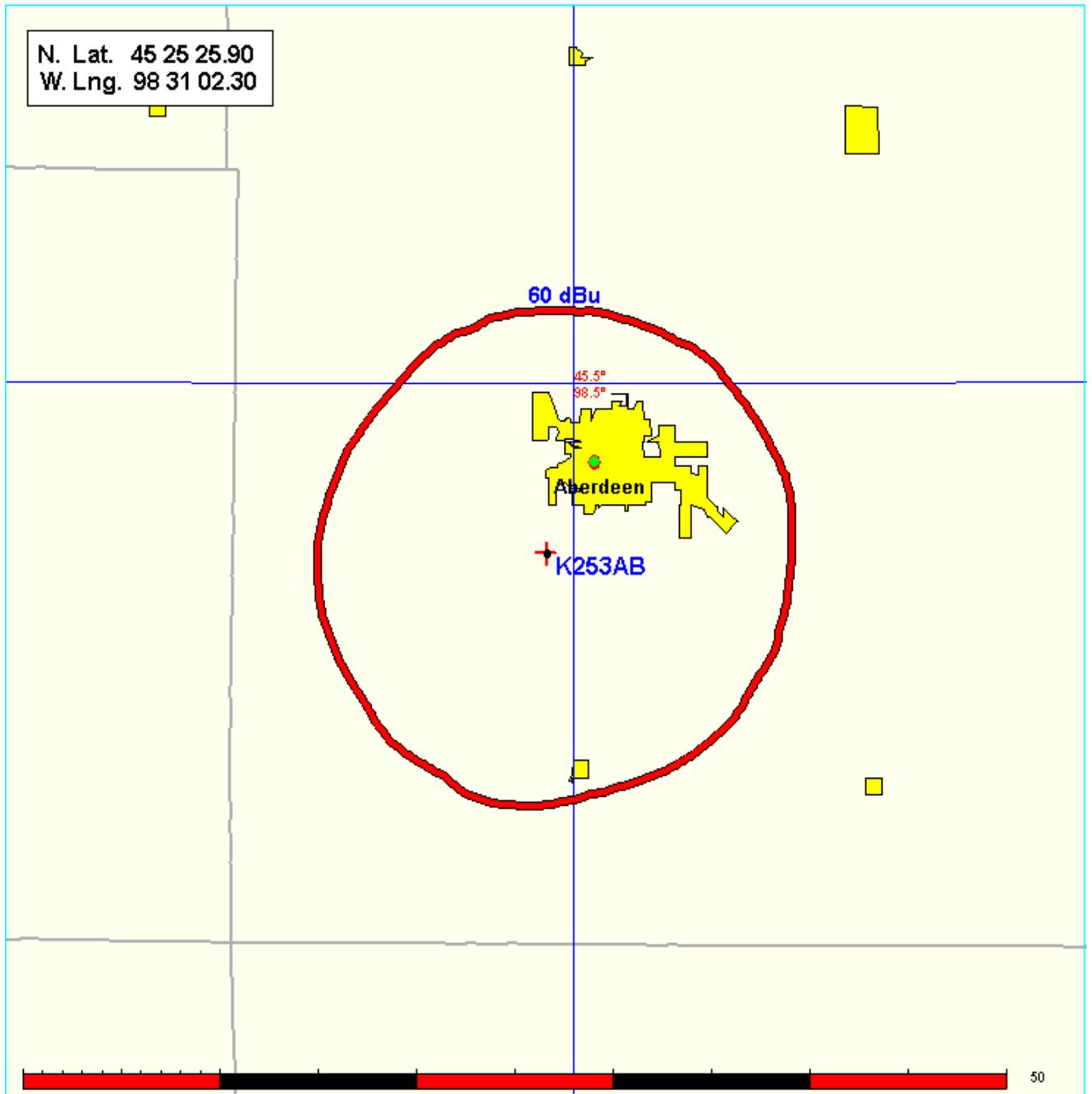
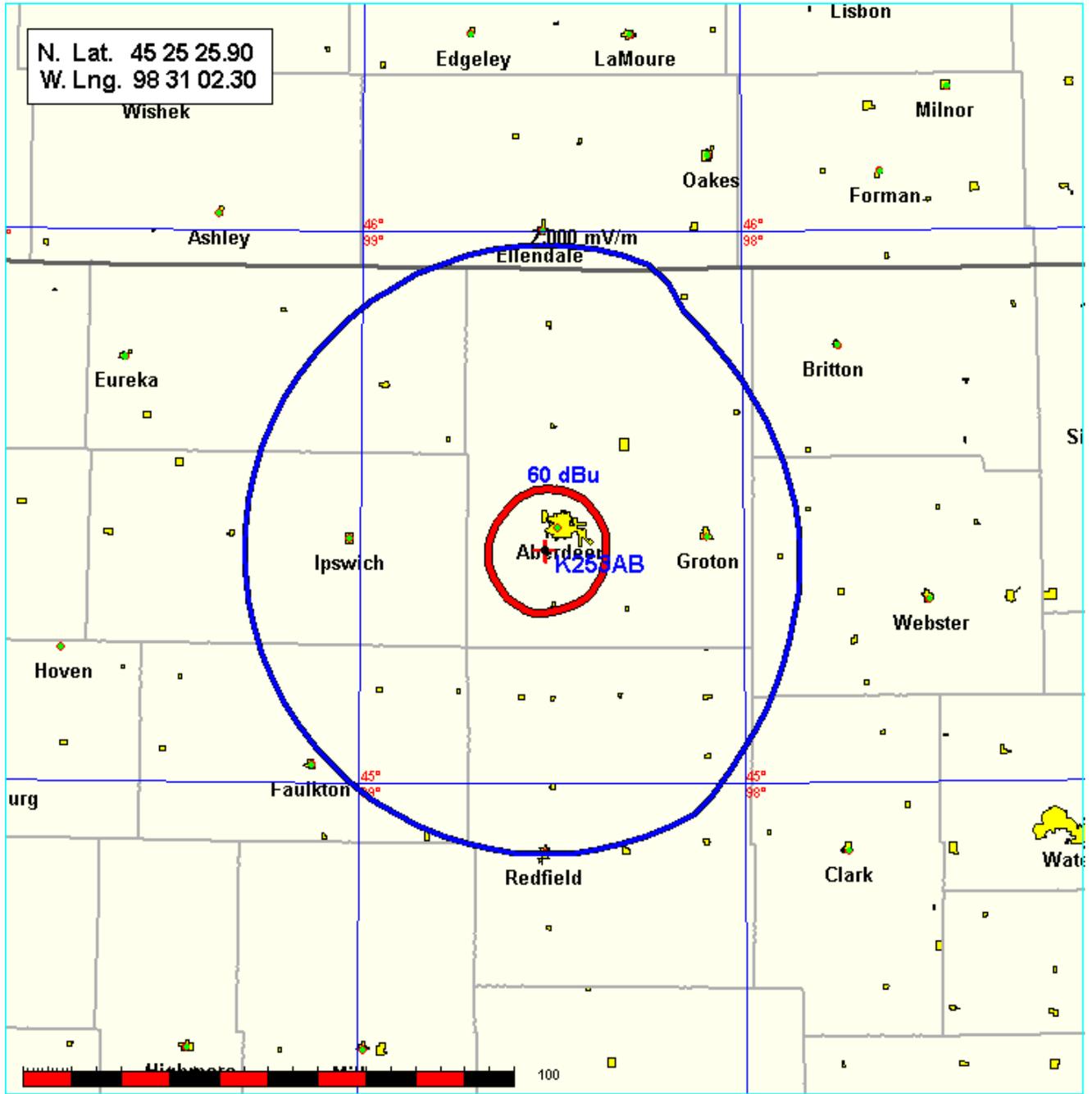
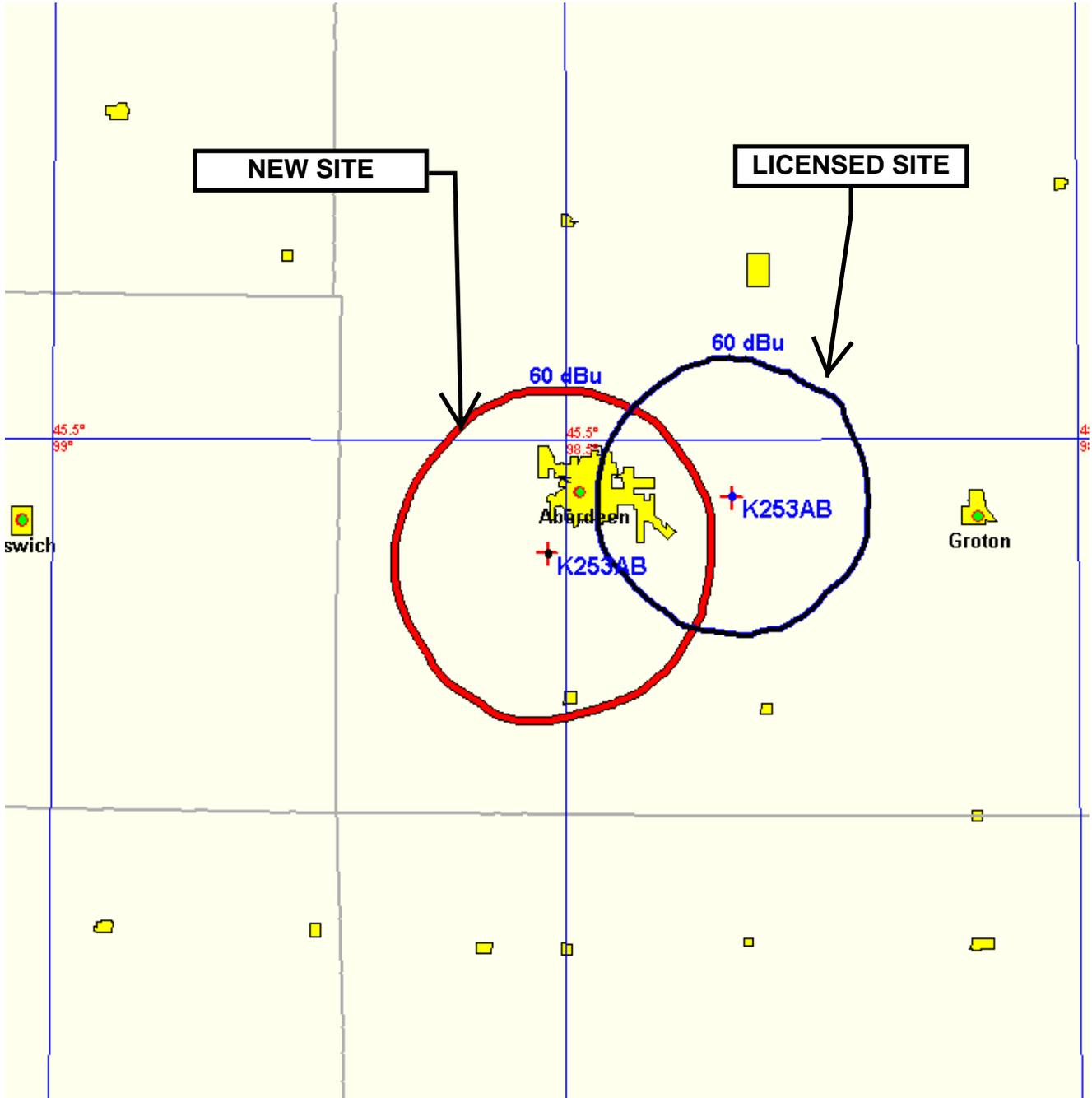


FIGURE 4 - COVERAGE MAP



**FIGURE 5 - COVERAGE KGIM & K253AB**



**FIGURE 6 - COVERAGE LIC SITE & NEW SITE**