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ENGINEERING REPORT

APPLICATION for CONSTRUCTION PERMIT to RELOCATE ANTENNA SYSTEM

KIBM(AM)

1490 kHz

Omaha, Nebraska

Facility ID 74104

970 Watts ND-D, 900 Watts ND-N

Walnut Radio, LLC

December 2021

Purpose of Application

This Engineering Report has been prepared in support of an application by Walnut Radio, LLC ("Walnut") to relocate the antenna system of KIBM(AM), 1490 kHz, Omaha, Nebraska. Walnut proposes diplexed operation with co-owned KCRO(AM), Omaha, using the existing KCRO omni-directional antenna. No tower construction is proposed.

Allocation Considerations

Daytime

The proposed 970 Watt non-directional operation of KIBM will not result in prohibited contour overlap with any licensed or proposed facility, with the exception of KXLQ, Indianola, IA, KTOP, Topeka, KS and KLMS, Lincoln, NE. Existing overlap with each of these stations is reduced by this proposal, as demonstrated by the daytime allocation study map exhibits included in this application. All allocation studies are based on data from the December 13, 2021 edition of the CDBS and M3 ground conductivity data.

Nighttime

The proposed 900 Watt nighttime operation of KIBM will not enter the 25% RSS of any first-adjacent channel facility, as demonstrated by the Site to Site RSS calculations included in this report. This exhibit considers all facilities listed in the CDBS for which KIBM will exceed the 10% RSS threshold.

Facilities Proposed

Walnut proposes continued operation of KIBM on 1490 kHz with a power of 970 Watts daytime and 900 Watts nighttime time, using an omni-directional antenna (ND-U). The proposed daytime 5 mV/m contour will cover 100% of Omaha, as demonstrated in the map exhibit titled *Coverage of Community of License*. The proposed tower is 270° in height at 1490 kHz. The tower has been fitted with a six wire skirt designed to detune the tower above the 235 foot level. According to the computer modeling of this skirt system (included with this application), the detuned tower will have the characteristics of a 235 foot (128.2 degree) tower. All exhibits included in this report therefore assume a 128.2 degree tall tower with an efficiency of 334 mV/m/km at 1 kW, as determined by the NEC model of the antenna prepared by Kintronic Labs and included with this application.

The population within the 1V/m blanketing contour of the proposed 970 Watt daytime operation of KIBM is 281 persons¹, thus satisfying the requirements of §73.24(g).

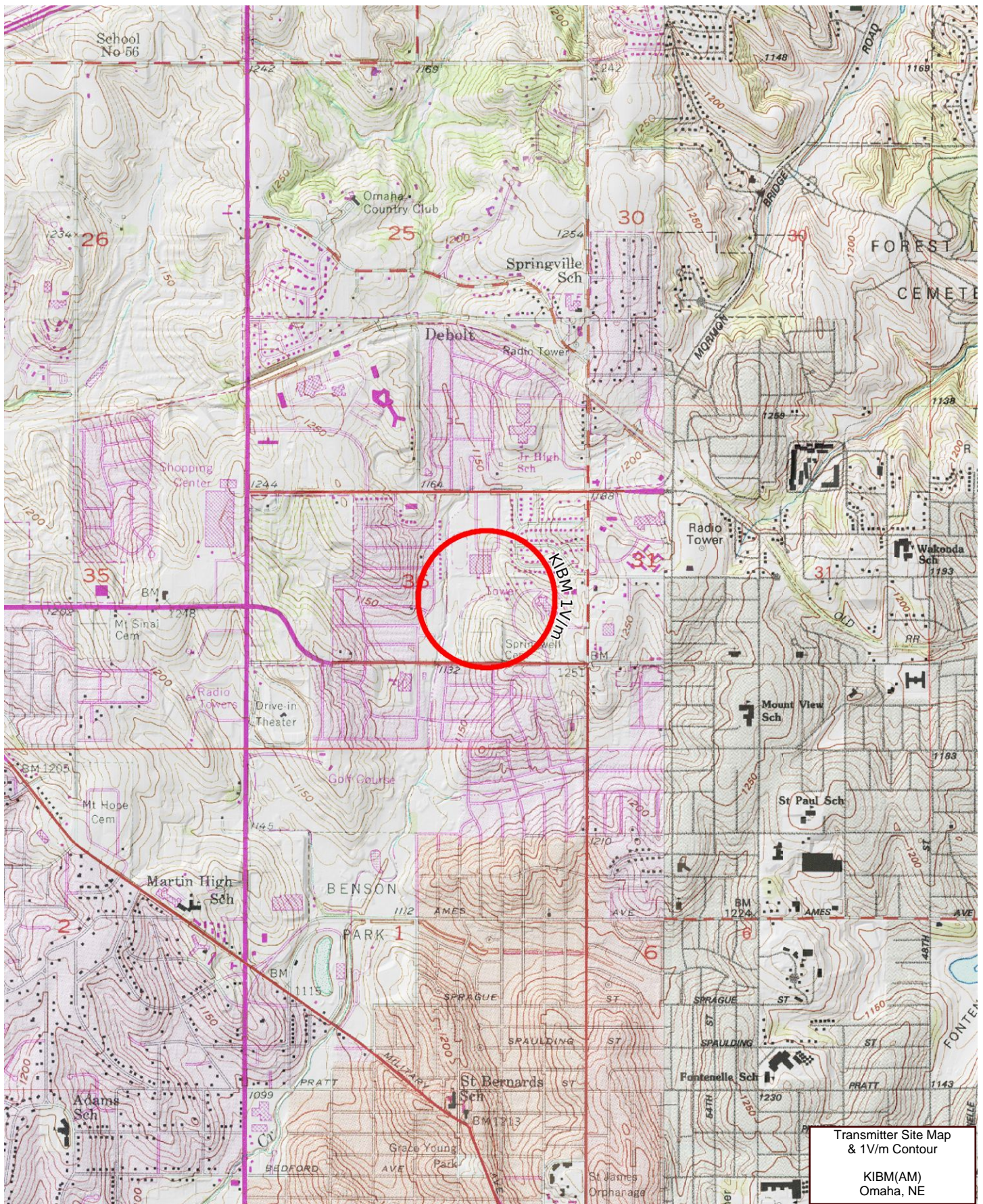
The ground system consists of 120 copper radials around the base of the tower. The average length of the radials is 325 feet (99 meters). There is a ground screen 24 foot square, at the base of the tower.

Antenna tower access is restricted by a fence with a locked gate that is at least 2 meters from the tower base, as required by OET-65. The antenna tower is posted with warning signs, and all station personnel and contractors will be required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken.

¹Based on 2020 US Census data, block centroid method.



KIBM Transmitter Site Photograph

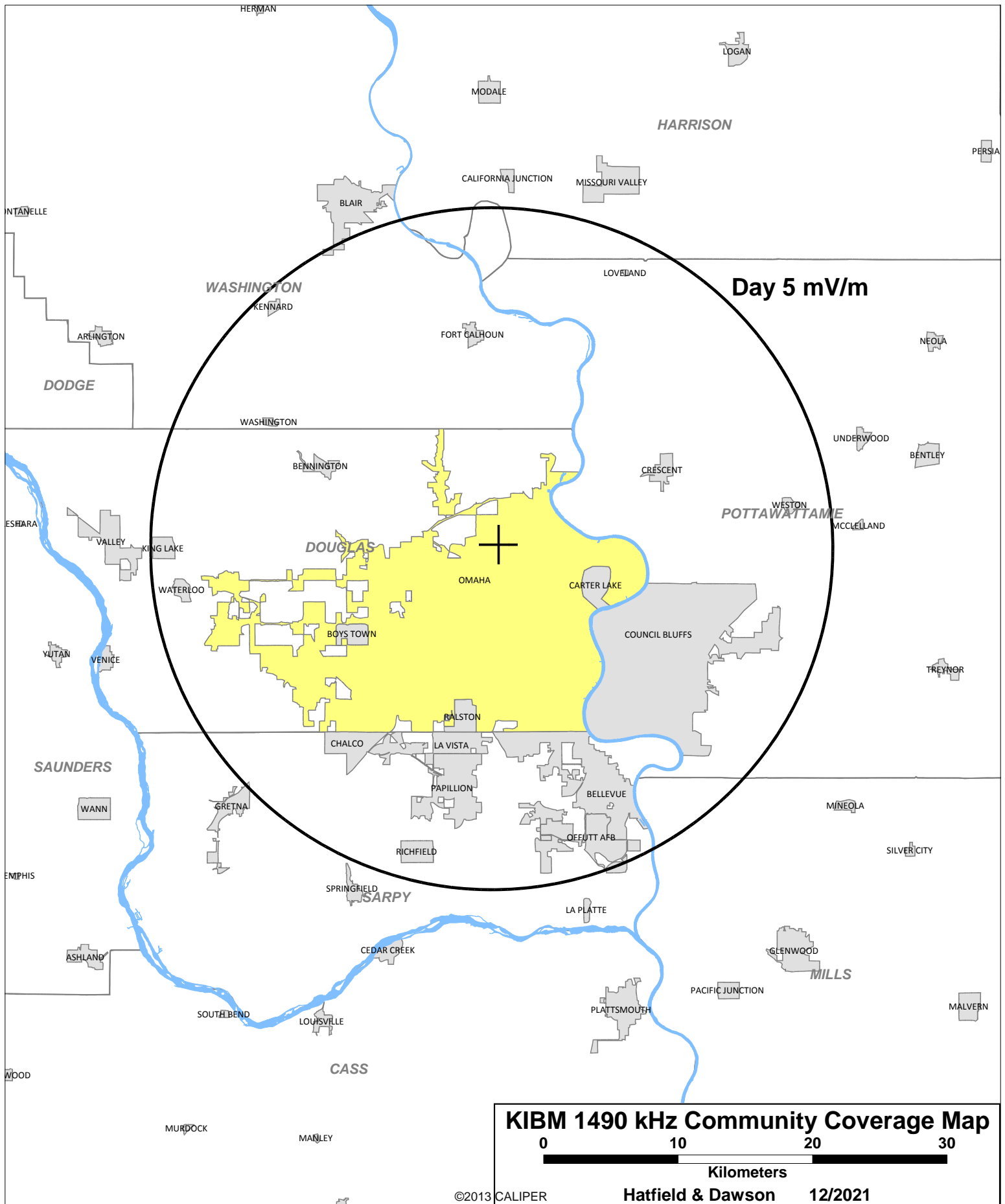


Mercator Projection
WGS84
UTM Zones 14T-15T


0.5 1.0 1.5 2.0 2.5 km
 0.5 1.0 1.5 mi
 Scale 1:24000 1 inch = 2000 feet



MN
2.3°



Day 5 mV/m

KIBM 1490 kHz Community Coverage Map

0 10 20 30

Kilometers

Hatfield & Dawson 12/2021

©2013 CALIPER

KIBM

Freq: 1490 kHz

Class: C

Latitude: 41-18-47 N

Longitude: 096-00-36 W

Power: 0.97 kW

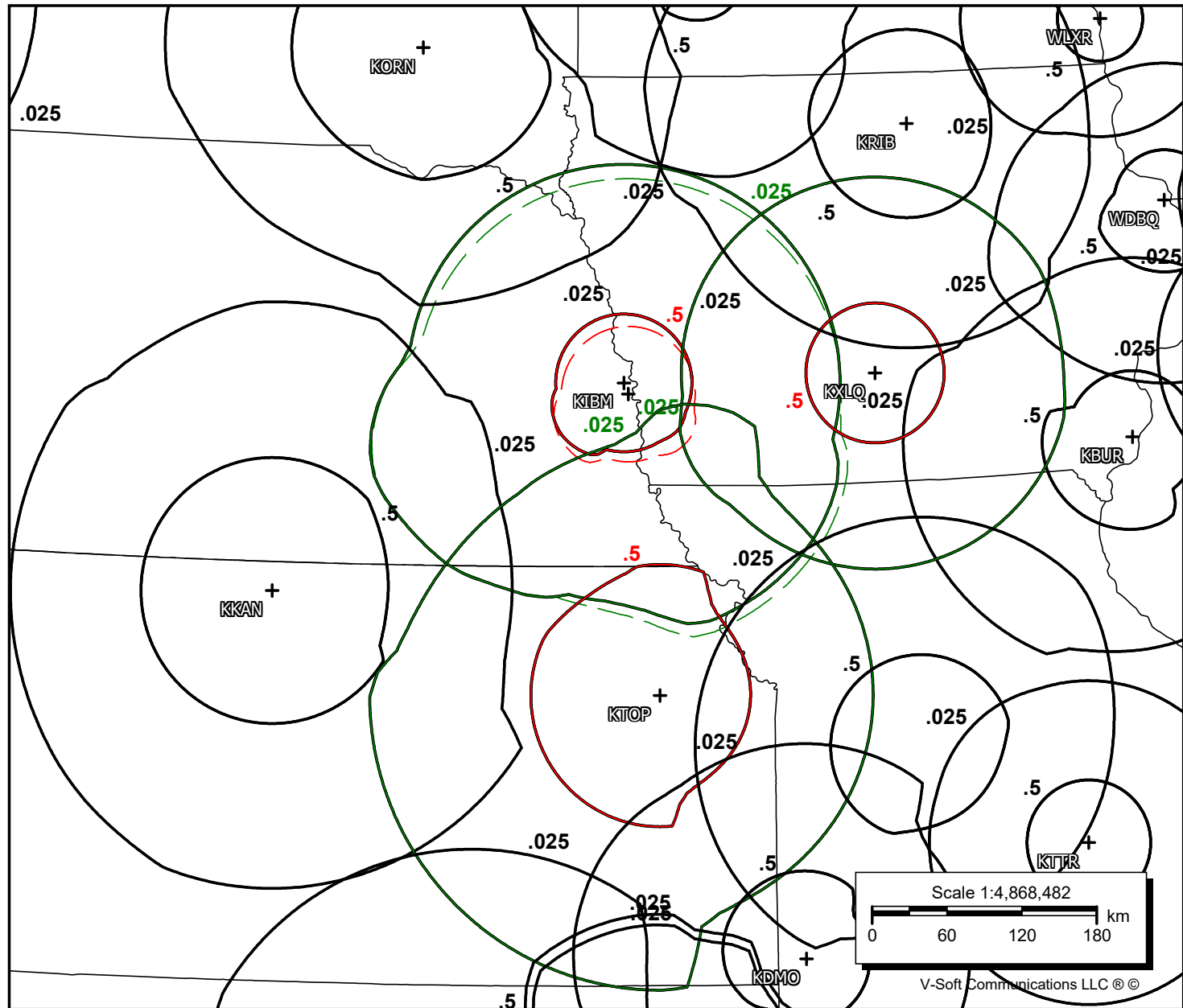
RMS: 334 mV/m @1km

Towers: 1

Augs: 0

Co-Channel
Daytime Allocation Study

Dashed lines are
Licensed Contours



KIBM

Freq: 1490 kHz

Class: C

Latitude: 41-18-47 N

Longitude: 096-00-36 W

Power: 0.97 kW

RMS: 334 mV/m @1km

Towers: 1

AUs: 0

1st-adjacent Channel
Daytime Allocation Study

Dashed lines are
Licensed Contours

"Caused" Interference Area

Licensed = 7095 km²

Proposed = 7093 km²

"Received" Interference Area

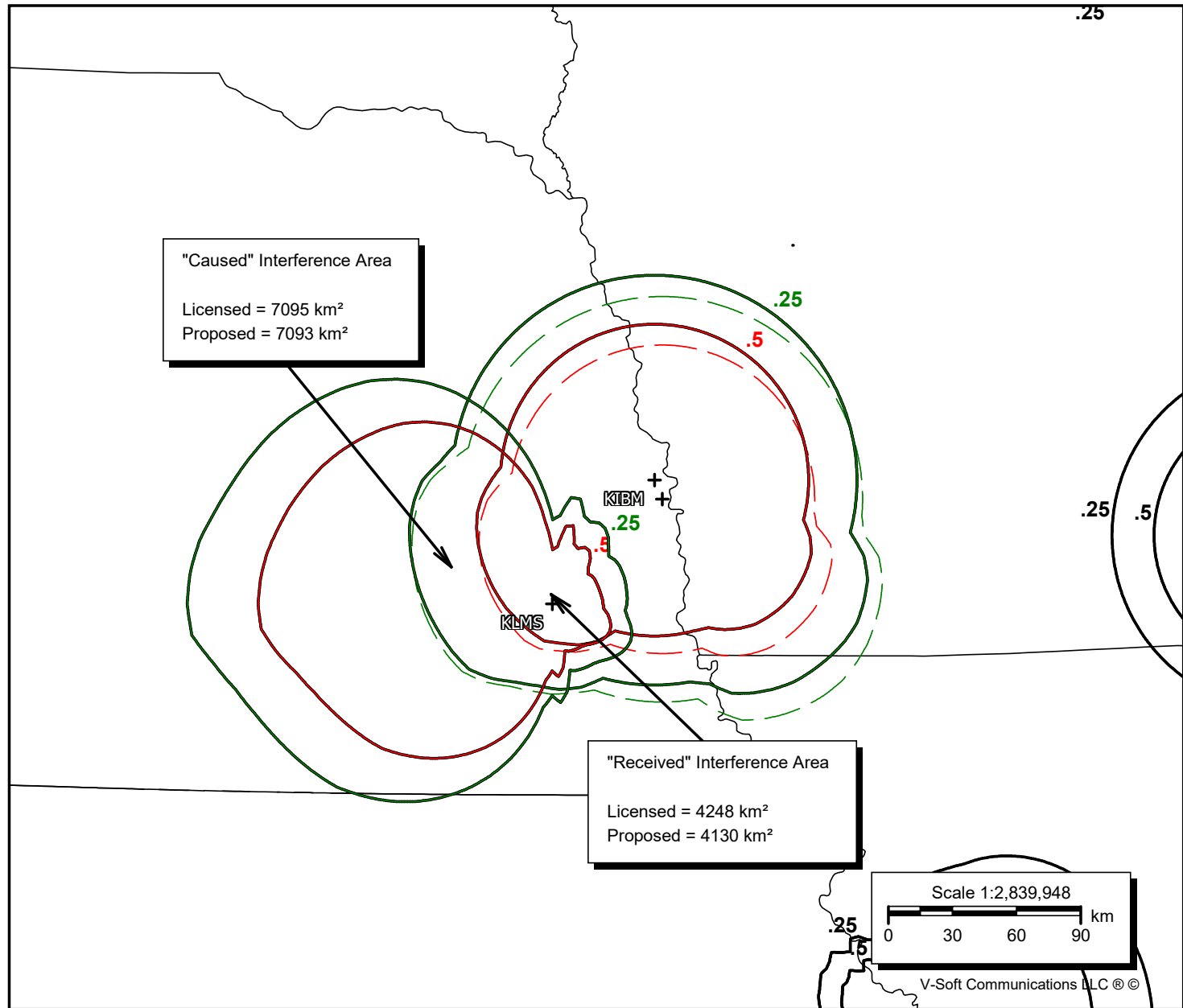
Licensed = 4248 km²

Proposed = 4130 km²

Scale 1:2,839,948

0 30 60 90 km

V-Soft Communications LLC ©



KIBM

Freq: 1490 kHz

Class: C

Latitude: 41-18-47 N

Longitude: 096-00-36 W

Power: 0.97 kW

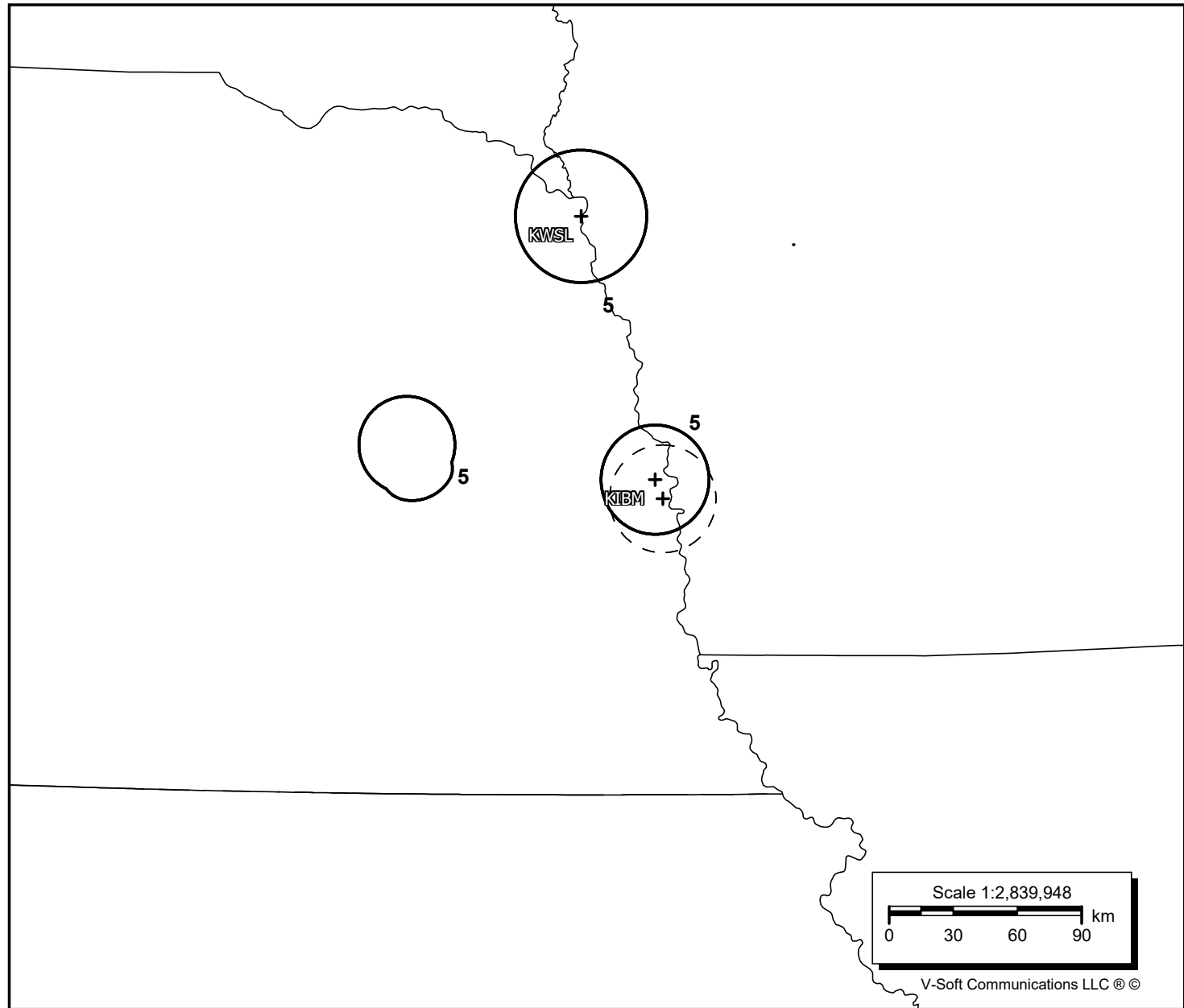
RMS: 334 mV/m @1km

Towers: 1

Aucs: 0

2nd-adjacent Channel
Daytime Allocation Study

Dashed lines are
Licensed Contours



KIBM

Freq: 1490 kHz

Class: C

Latitude: 41-13-59 N

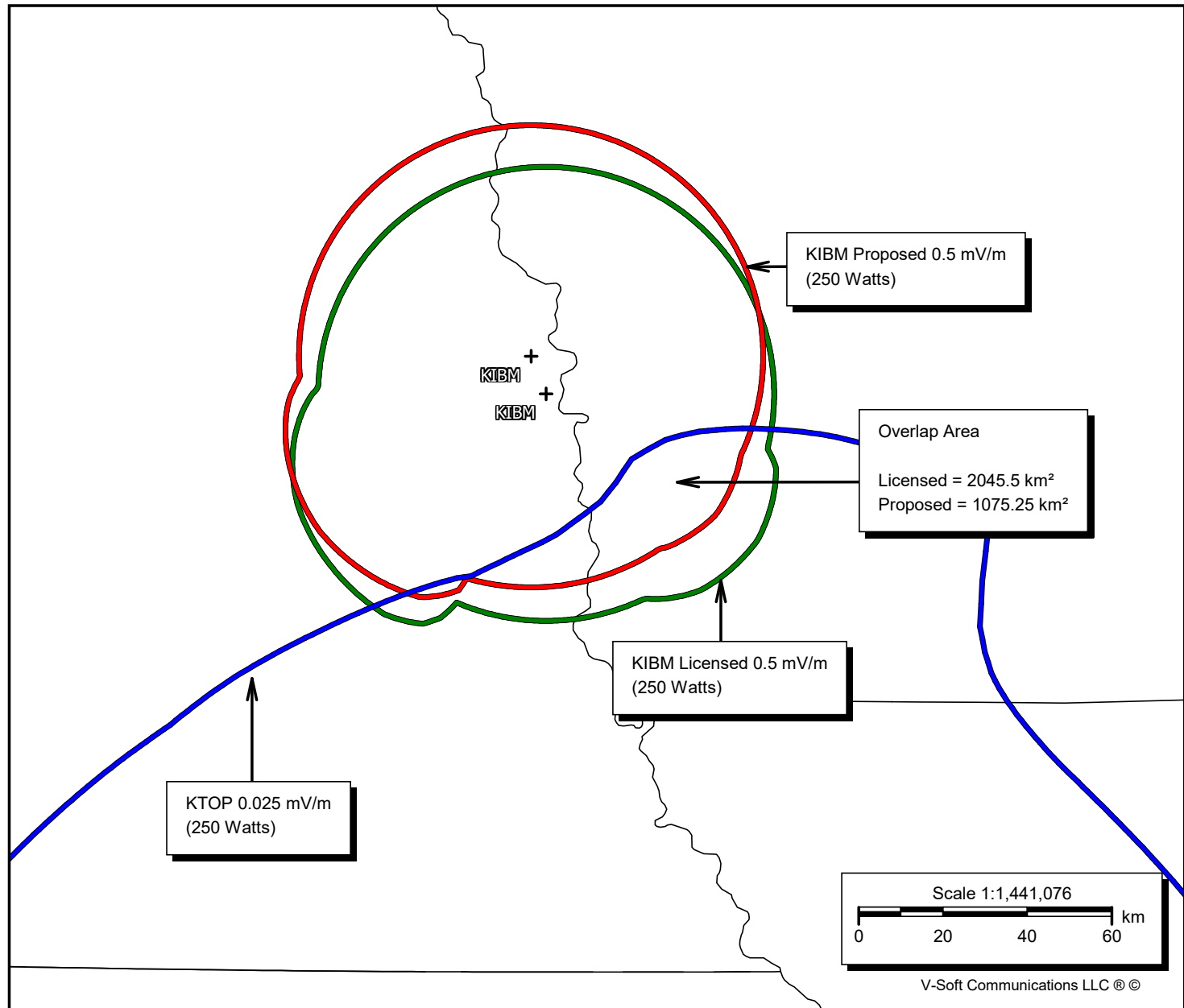
Longitude: 095-58-02 W

Power: 0.25 kW

RMS: 320.26 mV/m @1km

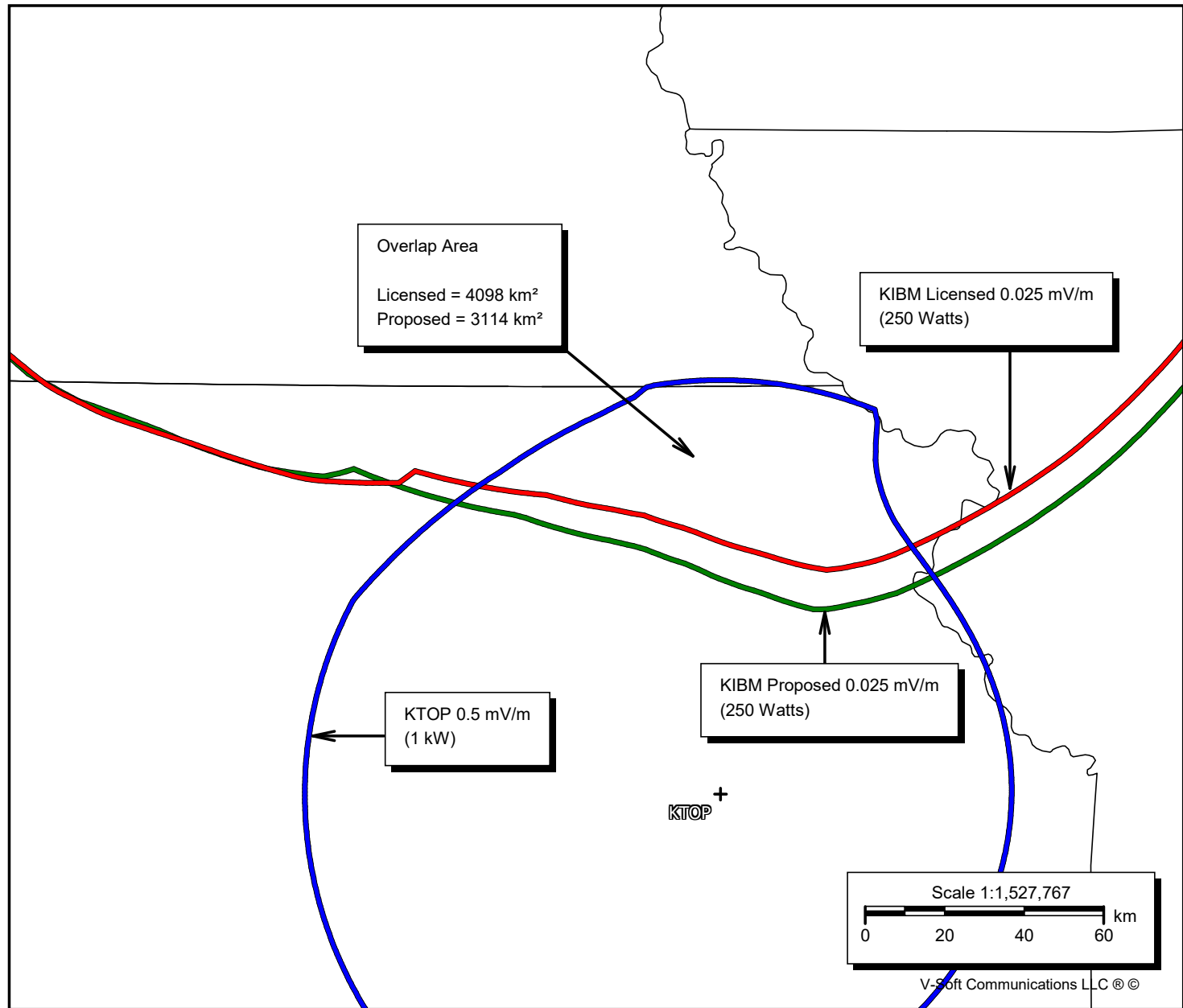
Towers: 1

Aucs: 0



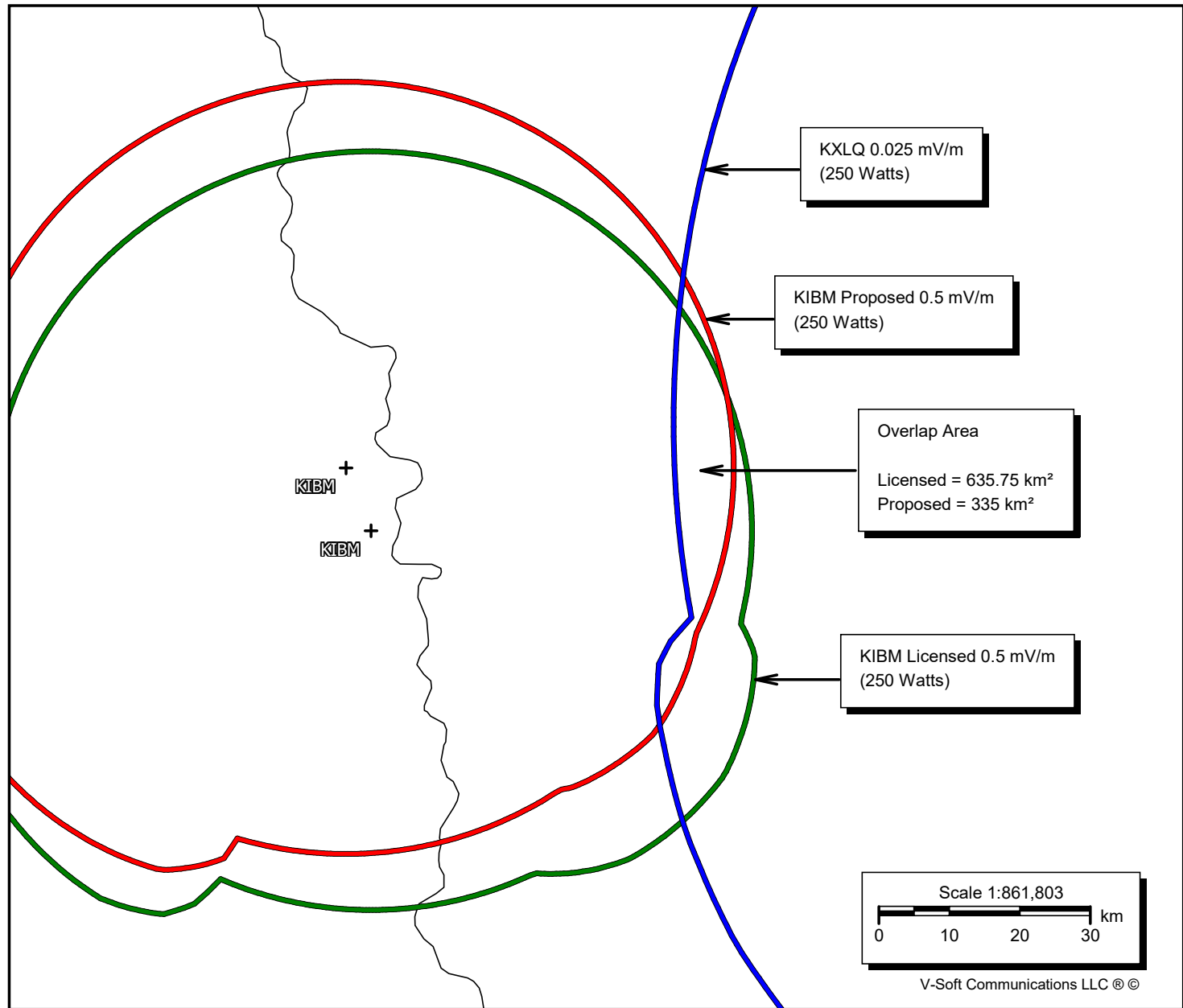
KIBM

Freq: 1490 kHz
Class: C
Latitude: 41-13-59 N
Longitude: 095-58-02 W
Power: 0.25 kW
RMS: 320.26 mV/m @1km
Towers: 1
Aucs: 0



KIBM

Freq: 1490 kHz
Class: C
Latitude: 41-13-59 N
Longitude: 095-58-02 W
Power: 0.25 kW
RMS: 320.26 mV/m @1km
Towers: 1
Augs: 0



KIBM

Freq: 1490 kHz

Class: C

Latitude: 41-13-59 N

Longitude: 095-58-02 W

Power: 0.25 kW

RMS: 320.26 mV/m @1km

Towers: 1

Aucs: 0

KIBM Licensed 0.025 mV/m
(250 Watts)

KIBM Proposed 0.025 mV/m
(250 Watts)

Overlap Area

Licensed = 1718.75 km²
Proposed = 1656.75 km²

KXLQ 0.5 mV/m
(Licensed Power)

KXLQ +

Scale 1:1,111,085

0 10 20 30 km

V-Soft Communications LLC © ©

Site to Site RSS Calculations

Protected Station: KLMS, 1480 kHz - LINCOLN, NE, US

Coordinates: 40-47-47 N, 096-34-56 W

Standard: FCC Rules (1992 Skywave Propagation Model) [10%]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
WPFR	1480	2.632	100.0
KCZZ	1480	1.937	73.6
KQAM	1480	1.932	59.1
-----	50%	-----	
WLMV	1480	1.439	37.8
KAUS	1480	1.421	34.9
KNGO	1480	1.338	31.1
KTOP	1490	1.332	29.5
KKAN	1490	1.240	26.4
-----	25%	-----	
KVNR	1480	1.195	24.5
KXLQ	1490	0.968	19.3
WRSW	1480	0.932	18.2
KRIB	1490	0.921	17.7
WDJO	1480	0.911	17.3
KLVL	1480	0.888	16.6
*KIBM	1490	0.888	16.3
KDRO	1490	0.854	15.5
KDMO	1490	0.814	14.6
WMDD	1480	0.777	13.8
XEGX/A	1480	0.759	13.3
KBUR	1490	0.719	12.5
WDBQ	1490	0.712	12.3
KLGR	1490	0.674	11.6
XEIP/A	1480	0.651	11.1
XE/A	1480	0.650	11.0
XEVCRA	1480	0.647	10.9
KYWL	1480	0.647	10.8
WABF	1480	0.645	10.7
KTTR	1490	0.644	10.7

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
WPFR	1480	2.632	100.0
KCZZ	1480	1.937	73.6
KQAM	1480	1.932	59.1
-----	50%	-----	
WLMV	1480	1.439	37.8
KAUS	1480	1.421	34.9
KNGO	1480	1.338	31.1
KTOP	1490	1.332	29.5
KKAN	1490	1.240	26.4
-----	25%	-----	
KVNR	1480	1.195	24.5
KXLQ	1490	0.968	19.3
WRSW	1480	0.932	18.2
KRIB	1490	0.921	17.7
WDJO	1480	0.911	17.3
KLVL	1480	0.888	16.6
KDRO	1490	0.854	15.7
KDMO	1490	0.814	14.8
*KIBM-PRO	1490	0.796	14.3
WMDD	1480	0.777	13.8
XEGX/A	1480	0.759	13.4
KBUR	1490	0.719	12.6
WDBQ	1490	0.712	12.3
KLGR	1490	0.674	11.6
XEIP/A	1480	0.651	11.1
XE/A	1480	0.650	11.0
XEVCRA	1480	0.647	10.9
KYWL	1480	0.647	10.8
WABF	1480	0.645	10.7
KTTR	1490	0.644	10.7

Protected Station: KAUS, 1480 kHz - AUSTIN, MN, US
 Coordinates: 43-37-20 N, 092-59-26 W
 Standard: FCC Rules (1992 Skywave Propagation Model) [10%]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
WMBD	1470	2.808	100.0
WLMV	1480	2.084	74.2
KLMS	1480	1.991	56.9
-----	50%	-----	
WDYS	1480	1.982	49.2
WHBC	1480	1.610	35.9
WLXR	1490	1.320	27.7
-----	25%	-----	
KNGO	1480	1.217	24.6
WIGM	1490	1.065	20.9
WSDS	1480	0.994	19.1
KXRA	1490	0.975	18.3
WPFR	1480	0.965	17.9
WDJO	1480	0.961	17.5
KQAM	1480	0.955	17.1
KXLQ	1490	0.949	16.8
*KIBM	1490	0.927	16.2
KLGR	1490	0.922	15.9
WGEZ	1490	0.912	15.5
WOSH	1490	0.907	15.2
KJOQ	1490	0.890	14.8
KVNR	1480	0.846	13.9
KBUR	1490	0.821	13.3
WGVU	1480	0.806	13.0
WZRC	1480	0.795	12.7
WMDD	1480	0.761	12.1
1480CKDX/	1480	0.700	11.0
WZOE	1490	0.668	10.4

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
WMBD	1470	2.808	100.0
WLMV	1480	2.084	74.2
KLMS	1480	1.991	56.9
-----	50%	-----	
WDYS	1480	1.982	49.2
WHBC	1480	1.610	35.9
WLXR	1490	1.320	27.7
-----	25%	-----	
KNGO	1480	1.217	24.6
WIGM	1490	1.065	20.9
WSDS	1480	0.994	19.1
KXRA	1490	0.975	18.3
WPFR	1480	0.965	17.9
WDJO	1480	0.961	17.5
KQAM	1480	0.955	17.1
KXLQ	1490	0.949	16.8
KLGR	1490	0.922	16.1
WGEZ	1490	0.912	15.7
*KIBM-PRO	1490	0.907	15.4
WOSH	1490	0.907	15.2
KJOQ	1490	0.890	14.8
KVNR	1480	0.846	13.9
KBUR	1490	0.821	13.4
WGVU	1480	0.806	13.0
WZRC	1480	0.795	12.7
WMDD	1480	0.761	12.1
1480CKDX/	1480	0.700	11.0
WZOE	1490	0.668	10.4

Protected Station: KQAM, 1480 kHz - WICHITA, KS, US
 Coordinates: 37-44-21 N, 097-16-14 W
 Standard: FCC Rules (1992 Skywave Propagation Model) [10%]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
KLMS	1480	2.971	100.0
WPFR	1480	2.895	97.4
KCZZ	1480	2.263	54.5
----- 50% -----			
WDYS	1480	1.565	33.1
KLVL	1480	1.489	29.9
KMFS	1490	1.364	26.2
KTOP	1490	1.350	25.1
----- 25% -----			
KAUS	1480	1.306	23.5
KDMO	1490	1.237	21.7
KKAN	1490	1.175	20.1
KVNR	1480	1.130	19.0
XEGX/A	1480	1.075	17.7
WLMV	1480	1.055	17.1
XEIP/A	1480	0.914	14.6
XE/A	1480	0.910	14.4
XEVCR/A	1480	0.905	14.2
KDRO	1490	0.877	13.6
*KIBM	1490	0.876	13.5
WMDD	1480	0.874	13.3
KNGO	1480	0.873	13.2
XETKR/A	1480	0.849	12.7
KVWC	1490	0.833	12.4
XEMC/A	1480	0.825	12.1
KBIX	1490	0.815	11.9
XE/A	1480	0.793	11.5
XEOU/A	1480	0.787	11.3
XEPR/A	1480	0.785	11.2
XE/A	1480	0.775	11.0
XEXC/A	1480	0.772	10.9
KTTR	1490	0.722	10.1

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
KLMS	1480	2.971	100.0
WPFR	1480	2.895	97.4
KCZZ	1480	2.263	54.5
----- 50% -----			
WDYS	1480	1.565	33.1
KLVL	1480	1.489	29.9
KMFS	1490	1.364	26.2
KTOP	1490	1.350	25.1
----- 25% -----			
KAUS	1480	1.306	23.5
KDMO	1490	1.237	21.7
KKAN	1490	1.175	20.1
KVNR	1480	1.130	19.0
XEGX/A	1480	1.075	17.7
WLMV	1480	1.055	17.1
XEIP/A	1480	0.914	14.6
XE/A	1480	0.910	14.4
XEVCR/A	1480	0.905	14.2
KDRO	1490	0.877	13.6
WMDD	1480	0.874	13.4
KNGO	1480	0.873	13.3
XETKR/A	1480	0.849	12.8
*KIBM-PRO	1490	0.838	12.5
KVWC	1490	0.833	12.4
XEMC/A	1480	0.825	12.1
KBIX	1490	0.815	11.9
XE/A	1480	0.793	11.5
XEOU/A	1480	0.787	11.3
XEPR/A	1480	0.785	11.2
XE/A	1480	0.775	11.0
XEXC/A	1480	0.772	10.9
KTTR	1490	0.722	10.1

Protected Station: 1490VIRDEN/ , 1490 kHz - Virden, MB, CA
 Coordinates: 49-49-53 N, 100-53-40 W
 Standard: Canadian (Figure 4) [10%]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
KOVC	1490	7.743	100.0
KNDC	1490	7.342	94.8
CJSN/	1490	6.711	62.8
KXRA	1490	6.393	50.7
----- 50% -----			
KJOQ	1490	5.956	42.1
KLGR	1490	5.271	34.3
KORN	1490	4.954	30.5
KFCR	1490	4.895	28.8
1490CJPR/	1490	4.838	27.4
WIGM	1490	4.824	26.3
KRIB	1490	4.815	25.4
----- 25% -----			
KGOS	1490	4.396	22.5
WDBQ	1490	4.294	21.4
KUGR	1490	4.248	20.7
KDBM	1490	4.145	19.8
KYWL	1490	4.100	19.2
WLXR	1490	3.913	18.0
KHTC	1490	3.891	17.6
WOSH	1490	3.859	17.2
*KIBM	1490	3.847	16.9
KKAN	1490	3.324	14.4
KBUR	1490	2.912	12.5
KJNT	1490	2.910	12.4
WTIQ	1490	2.888	12.2
KXLQ	1490	2.653	11.1
KCID	1490	2.645	11.0
WGEZ	1490	2.640	10.9
KTOP	1490	2.517	10.3
KXRE	1490	2.510	10.2

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
KOVC	1490	7.743	100.0
KNDC	1490	7.342	94.8
CJSN/	1490	6.711	62.8
KXRA	1490	6.393	50.7
----- 50% -----			
KJOQ	1490	5.956	42.1
KLGR	1490	5.271	34.3
KORN	1490	4.954	30.5
KFCR	1490	4.895	28.8
1490CJPR/	1490	4.838	27.4
WIGM	1490	4.824	26.3
KRIB	1490	4.815	25.4
----- 25% -----			
KGOS	1490	4.396	22.5
WDBQ	1490	4.294	21.4
KUGR	1490	4.248	20.7
KDBM	1490	4.145	19.8
KYWL	1490	4.100	19.2
WLXR	1490	3.913	18.0
KHTC	1490	3.891	17.6
WOSH	1490	3.859	17.2
*KIBM-PRO	1490	3.851	16.9
KKAN	1490	3.324	14.4
KBUR	1490	2.912	12.5
KJNT	1490	2.910	12.3
WTIQ	1490	2.888	12.2
KXLQ	1490	2.653	11.1
KCID	1490	2.645	11.0
WGEZ	1490	2.640	10.9
KTOP	1490	2.517	10.3
KXRE	1490	2.510	10.2

Protected Station: KCZZ, 1480 kHz - MISSION, KS, US
 Coordinates: 39-04-05 N, 094-42-09 W
 Standard: FCC Rules (1992 Skywave Propagation Model) [10%]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
KLMS	1480	5.715	100.0
WPFR	1480	4.784	83.7
-----	50%	-----	
KAUS	1480	3.446	46.2
KNGO	1480	3.072	37.4
KQAM	1480	2.760	31.4
WDYS	1480	2.526	27.4
-----	25%	-----	
WLMV	1480	1.826	19.1
KDMO	1490	1.318	13.5
*KIBM	1490	1.217	12.4
KLVL	1480	1.211	12.2
KTTR	1490	1.170	11.7
KTOP	1490	1.061	10.6

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
KLMS	1480	5.715	100.0
WPFR	1480	4.784	83.7
-----	50%	-----	
KAUS	1480	3.446	46.2
KNGO	1480	3.072	37.4
KQAM	1480	2.760	31.4
WDYS	1480	2.526	27.4
-----	25%	-----	
WLMV	1480	1.826	19.1
KDMO	1490	1.318	13.5
KLVL	1480	1.211	12.3
KTTR	1490	1.170	11.8
*KIBM-PRO	1490	1.141	11.4
KTOP	1490	1.061	10.6

Protected Station: CFNC/ , 1490 kHz - Cross Lake, MB, CA
 Coordinates: 54-37-28 N, 097-46-57 W
 Standard: Canadian (Figure 4) [10%]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)

KOVC	1490	4.781	100.0
KJOQ	1490	4.399	92.0
CJSN/	1490	4.387	67.5
KXRA	1490	3.925	50.0
-----	50%	-----	
KNDC	1490	3.755	42.8
WIGM	1490	3.366	35.2
1490VIRDEN/	1490	3.145	31.0
1490CJPR/	1490	3.065	28.9
KLGR	1490	3.012	27.3
-----	25%	-----	
KORN	1490	2.729	23.8
WOSH	1490	2.672	22.7
KRIB	1490	2.639	21.8
WDBQ	1490	2.514	20.3
WTIQ	1490	2.475	19.6
WLXR	1490	2.383	18.5
KFCR	1490	2.038	15.6
KHTC	1490	2.024	15.3
KDBM	1490	1.842	13.7
KYWL	1490	1.842	13.6
*KIBM	1490	1.699	12.4
KGOS	1490	1.656	12.0
WGEZ	1490	1.606	11.6
WLAW	1490	1.555	11.1
KUGR	1490	1.548	11.0
KBUR	1490	1.500	10.6

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)

KOVC	1490	4.781	100.0
KJOQ	1490	4.399	92.0
CJSN/	1490	4.387	67.5
KXRA	1490	3.925	50.0
-----	50%	-----	
KNDC	1490	3.755	42.8
WIGM	1490	3.366	35.2
1490VIRDEN/	1490	3.145	31.0
1490CJPR/	1490	3.065	28.9
KLGR	1490	3.012	27.3
-----	25%	-----	
KORN	1490	2.729	23.8
WOSH	1490	2.672	22.7
KRIB	1490	2.639	21.8
WDBQ	1490	2.514	20.3
WTIQ	1490	2.475	19.6
WLXR	1490	2.383	18.5
KFCR	1490	2.038	15.6
KHTC	1490	2.024	15.3
KDBM	1490	1.842	13.7
KYWL	1490	1.842	13.6
*KIBM-PRO	1490	1.709	12.5
KGOS	1490	1.656	12.0
WGEZ	1490	1.606	11.6
WLAW	1490	1.555	11.1
KUGR	1490	1.548	11.0
KBUR	1490	1.500	10.6

KIBM

Freq: 1490 kHz

Class: C

Latitude: 41-18-47 N

Longitude: 096-00-36 W

Power: 0.9 kW

RMS: 334 mV/m @1km

Towers: 1

Augs: 0

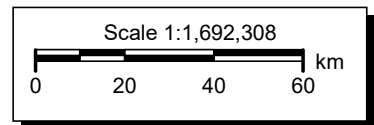
Skywave Protection
of Class A Station
KSTP

KSTP
500 μ V/m
Groundwave

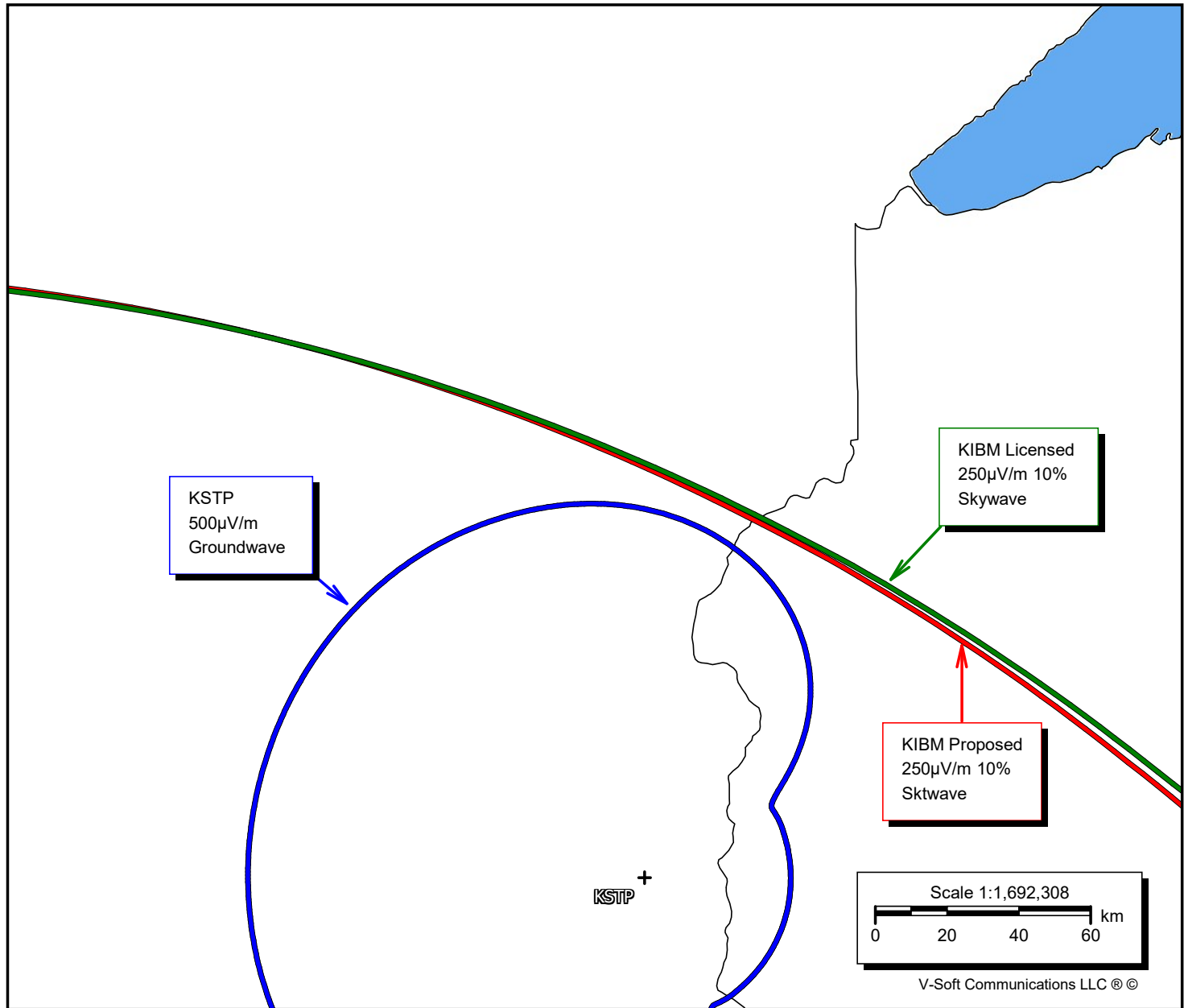
KIBM Licensed
250 μ V/m 10%
Skywave

KIBM Proposed
250 μ V/m 10%
Skywave

KSTP +



V-Soft Communications LLC ©



Statement of Engineer

This Engineering Report, relative to a change in facilities for KIBM(AM) has been prepared by the undersigned. All representations contained herein are true to the best of my knowledge. I am an experienced radio engineer whose qualifications are a matter of record with the Federal Communications Commission. I am an engineer in the firm of Hatfield and Dawson Consulting Engineers and am Registered as a Professional Engineer in the States of Washington and Oregon.

Signed this 17th day of December, 2021



Thomas S. Gorton, P.E.