OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS · EMC TEST LABORATORIES

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

MICHIGAN OFFICE
27451 Everett Street, Southfield, MI 48076
248-557-7274 • Fax 248-557-7275

800-797-1338

ENGINEERING EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT
MAIN STREET BROADCASTING, INC
RADIO STATION KOWZ
WASECA, MINNESOTA

JULY 18, 2003

1170 KHZ 2.5 KW-D 1 KW-CH 0.06 KW- N ND

OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS · EMC TEST LABORATORIES

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

MICHIGAN OFFICE
27451 Everett Street, Southfield, MI 48076
248-557-7274 • Fax 248-557-7275

800-797-1338

ENGINEERING EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT
MAIN STREET BROADCASTING, INC
RADIO STATION KOWZ
WASECA, MINNESOTA

1170 KHZ 2.5 KW-D 1 KW-CH 0.06 KW- N ND

Table of Contents

OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS · EMC TEST LABORATORIES

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

MICHIGAN OFFICE
27451 Everett Street, Southfield, MI 48076
248-557-7274 • Fax 248-557-7275

800-797-1338

ENGINEERING EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT
MAIN STREET BROADCASTING, INC
RADIO STATION KOWZ
WASECA, MINNESOTA

1170 KHZ 2.5 KW-D 1 KW-CH 0.06 KW- N ND

Technical Narrative

This technical exhibit has been prepared on behalf of Main Street Broadcasting, Inc., licensee of AM broadcast station KOWZ in Waseca, Minnesota. KOWZ is licensed to operate on a frequency of 1170 KHZ with a power of 1.0 kilowatts daytime and critical hours and 0.060 kilowatts at night with a non-directional pattern. This application proposes to increase the daytime power to 2.5 kilowatts and maintain both the critical and night hours at their present authorized levels.

The proposed facility will not have a significant environmental impact as defined in section 1.1307 of the Rules and Regulations. No notice is required to be sent to the FAA since no change in the existing tower is proposed and the tower is already registered.

Proposed Transmitter Location

The existing KOWZ tower site will be employed under this proposal. Figure 1 is a 7.5 minute topographical map showing the transmitter location.

Daytime Coverage

The proposed KOWZ daytime field strength contours are shown in Figures 2 and 3.

OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS · EMC TEST LABORATORIES

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

MICHIGAN OFFICE
27451 Everett Street, Southfield, MI 48076
248-557-7274 • Fax 248-557-7275

800-797-1338

Daytime Allocation Study

A daytime allocation study was made utilizing FCC Figure M-3 and measurements. Figures 4A, 4B and 4C show the contours for the stations that were examined in the study. Figure 5 shows the tabulated values for conductivity values that were used to compute the signal coverage contours. The signal coverage contours for radio station KVOO and KOWZ were plotted using conductivity values obtained from measurements performed on the 220° radial of KOWZ. As can be seen from these figures no overlap is predicted to occur on any stations that are required to be protected.

Measurements

The 220° radial was measured for KOWZ out to a distance of 60-kilometers. The measurements were all performed during daytime hours on May 23, 2003. Prior to any measurements the base RF ammeter was read to ensure that KOWZ was operating at the licensed power of 1 kilowatt. After the measurements were completed the RF ammeter was again read and found to be at the licensed value. Figure 6 tabulates and plots the results of the measurement data.

Critical Hours Study

The present license for KOWZ permits 1.0 kilowatt output power during the critical hours period. This application does not propose any change to this present authorization.

Respectfully Submitted,

Garrett G. Lysiak

Garrett G. Lysiak, P.E.

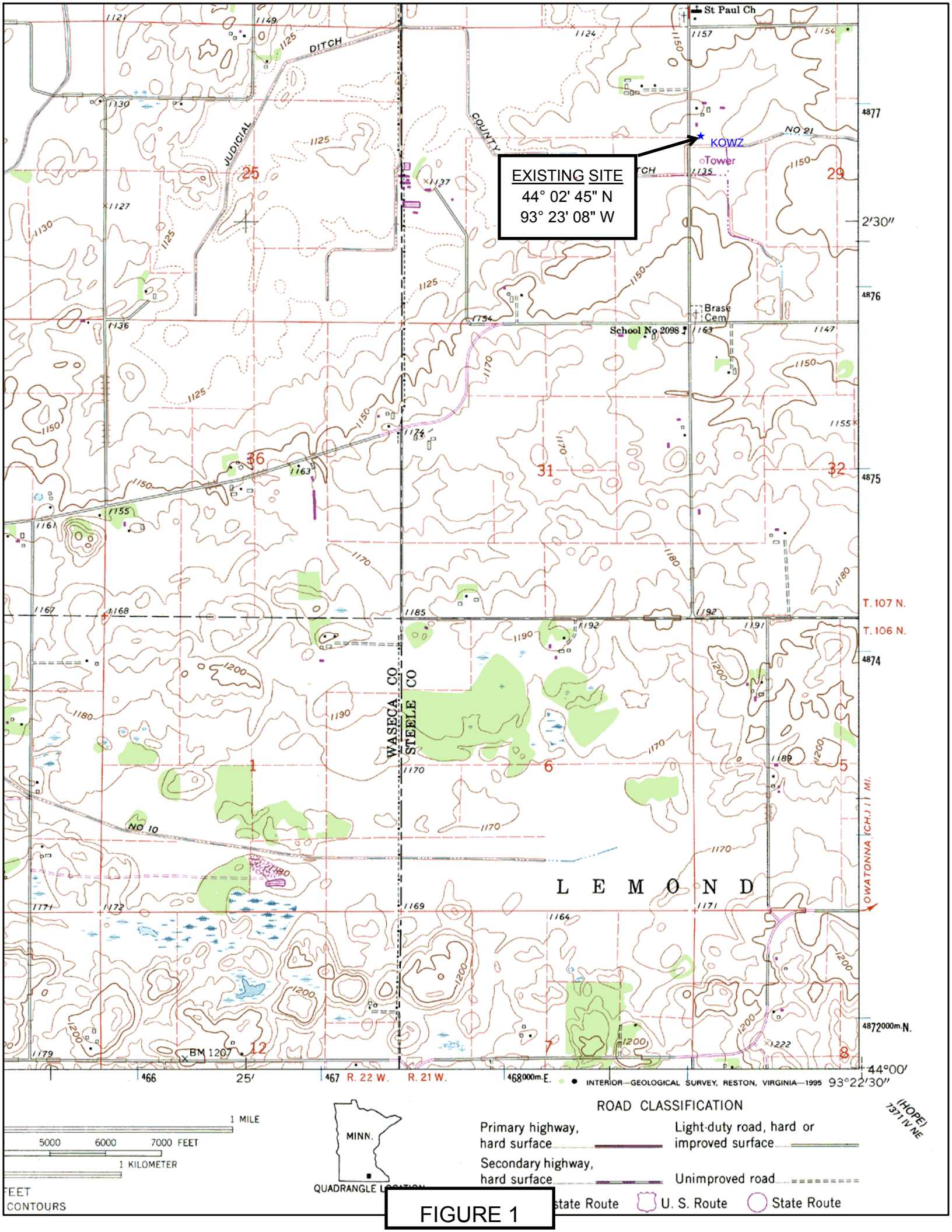
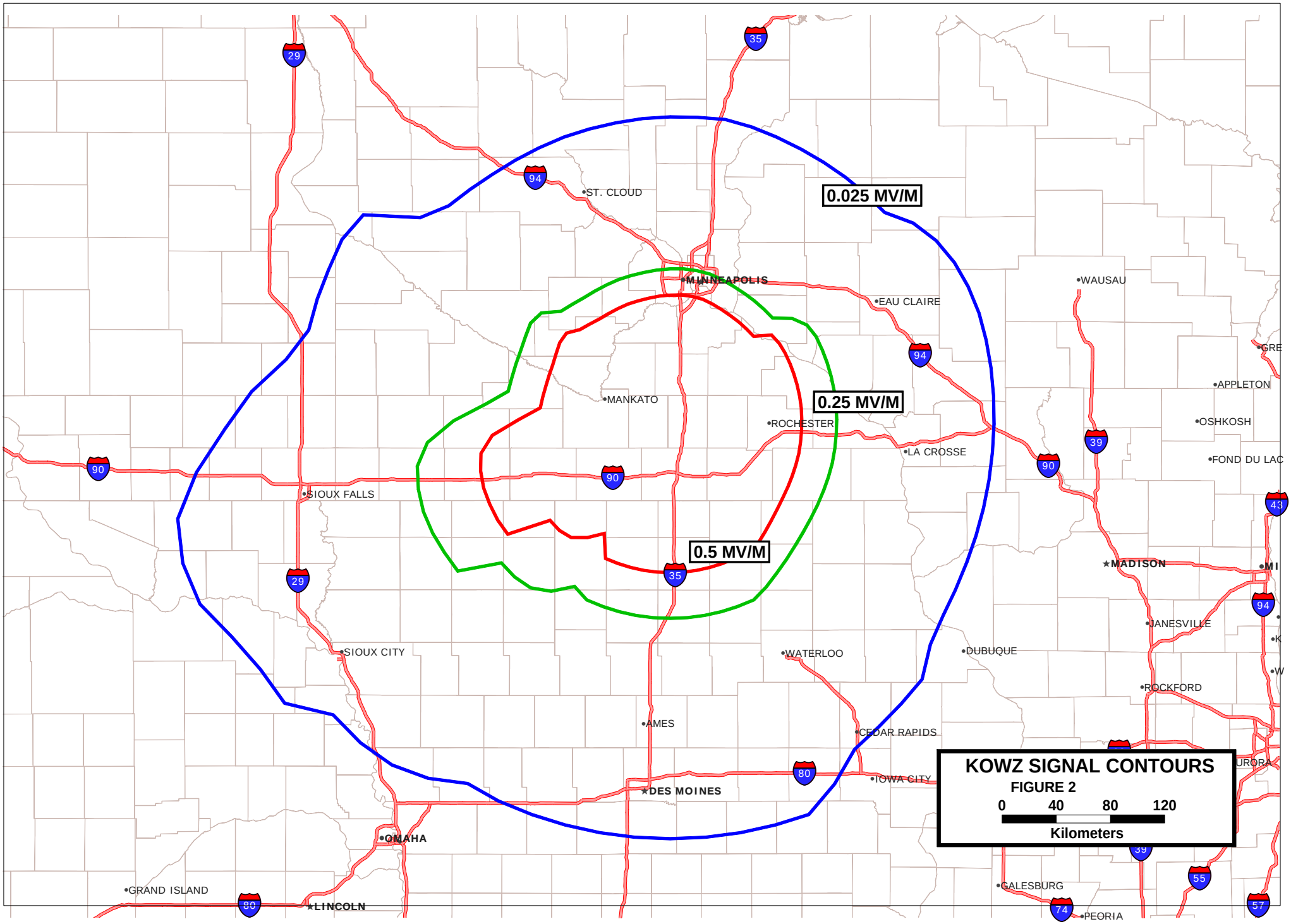

EXISTING SITE
44° 02' 45" N
93° 23' 08" W
KOWZ
Tower
St Paul Ch
Brase Cem
School No 2098
WASECA CO
STEELE CO
L E M O N D
OWATONNA 11 MI.
T. 107 N.
T. 106 N.
R. 22 W.
R. 21 W.
BM 1207
NO 21
NO 10
JUDICIAL DITCH
COUNTY DITCH
1 MILE
5000 6000 7000 FEET
1 KILOMETER
CONTOURS
MINN.
QUADRANGLE LOCATION
ROAD CLASSIFICATION
Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
State Route
U. S. Route
State Route
INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1995
93°22'30"
44°00'
(HOPE) 7371 IV NE

FIGURE 1


0.025 MV/M
0.25 MV/M
0.5 MV/M
ST. CLOUD
MINNEAPOLIS
EAU CLAIRE
WAUSAU
MANKATO
ROCHESTER
LA CROSSE
APPLETON
OSHKOSH
FOND DU LAC
SIOUX FALLS
SIOUX CITY
WATERLOO
DUBUQUE
MADISON
JANESVILLE
ROCKFORD
AMES
CEDAR RAPIDS
IOWA CITY
DES MOINES
OMAHA
GRAND ISLAND
LINCOLN
GALESBURG
PEORIA
KOWZ SIGNAL CONTOURS
FIGURE 2
0 40 80 120
Kilometers

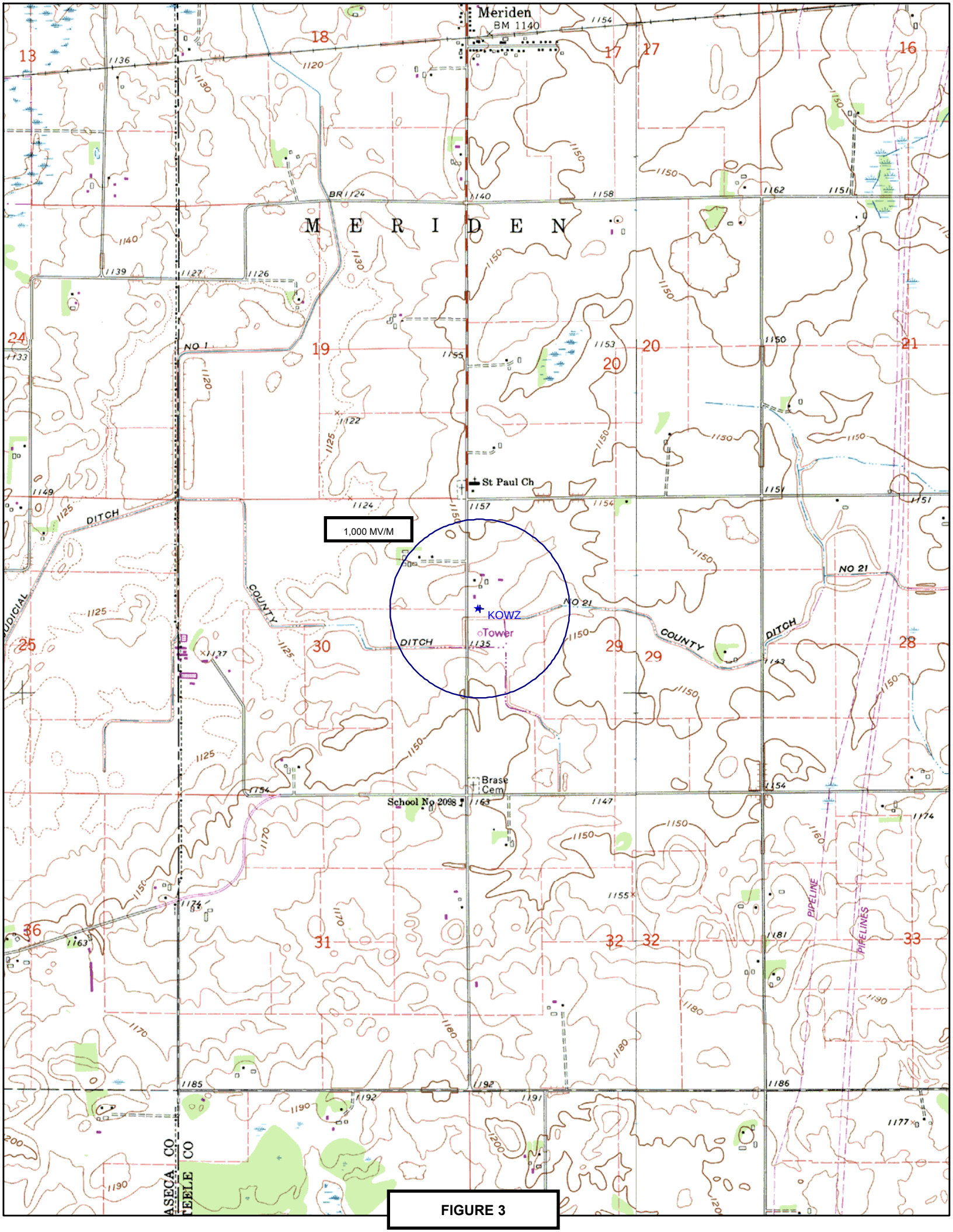
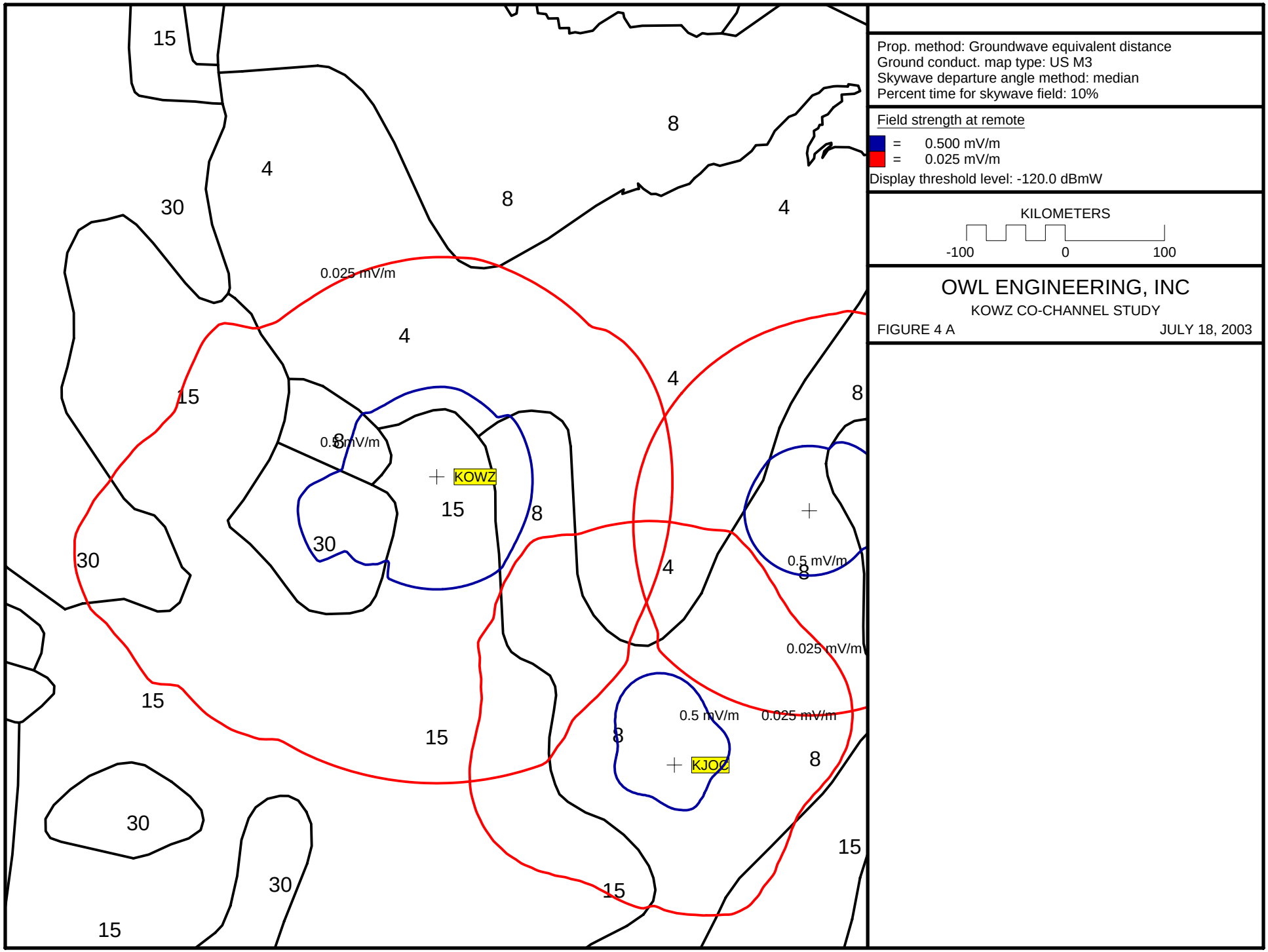

Meriden
BM 1140
MERIDEN
St Paul Ch
1,000 MV/M
KOWZ
Tower
Brase Cem
School No 2098
DITCH
COUNTY
NO 21
NO 1
PIPELINE
PIPELINES
ASECA CO
TEELE CO

FIGURE 3



Prop. method: Groundwave equivalent distance
Ground conduct. map type: US M3
Skywave departure angle method: median
Percent time for skywave field: 10%

Field strength at remote

= 0.500 mV/m
= 0.025 mV/m

Display threshold level: -120.0 dBmW

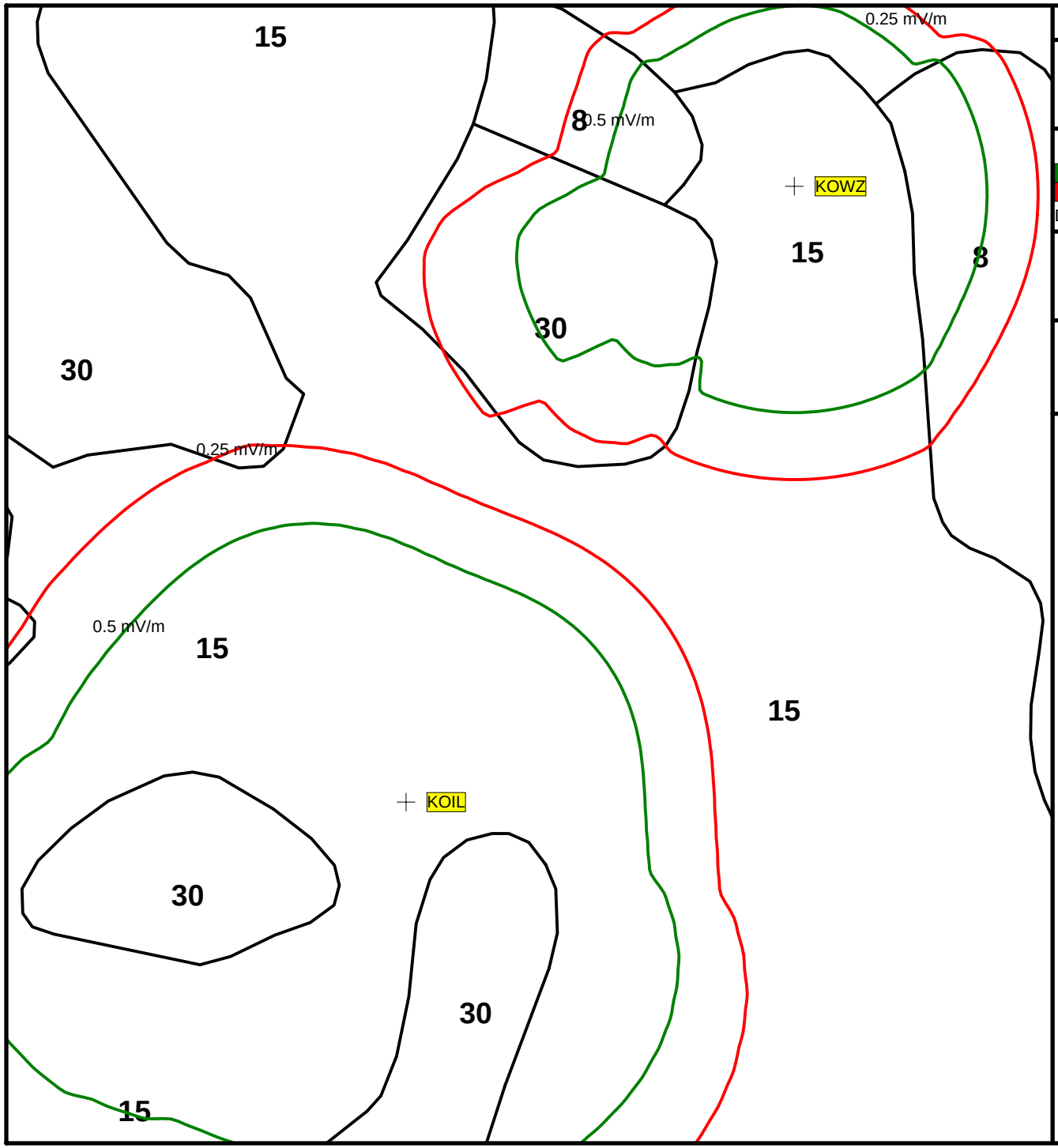
KILOMETERS

-100 0 100

OWL ENGINEERING, INC

KOWZ CO-CHANNEL STUDY

FIGURE 4 A JULY 18, 2003



Prop. method: Groundwave equivalent distance
Ground conduct. map type: US M3
Skywave departure angle method: median
Percent time for skywave field: 10%

Field strength at remote

= 0.500 mV/m
= 0.250 mV/m

Display threshold level: -120.0 dBmW

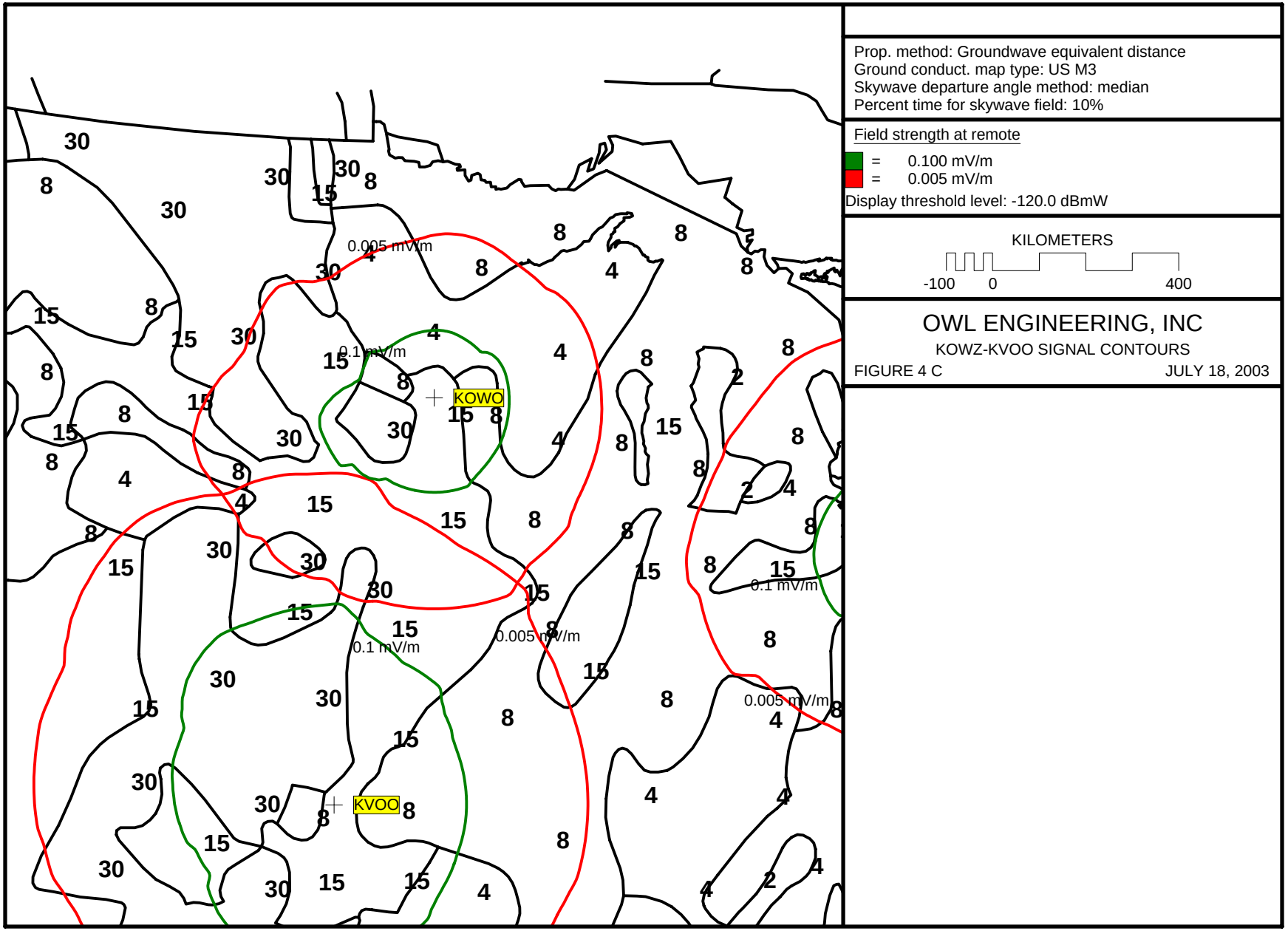
KILOMETERS

-25 0 100

OWL ENGINEERING, INC

KOWZ- 1ST ADJACENT

FIGURE 4 B JULY 18, 2003



Prop. method: Groundwave equivalent distance
Ground conduct. map type: US M3
Skywave departure angle method: median
Percent time for skywave field: 10%

Field strength at remote

= 0.100 mV/m
= 0.005 mV/m

Display threshold level: -120.0 dBmW

KILOMETERS

-100 0 400

OWL ENGINEERING, INC

KOWZ-KVOO SIGNAL CONTOURS

FIGURE 4 C JULY 18, 2003

OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS · EMC TEST LABORATORIES

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

MICHIGAN OFFICE
27451 Everett Street, Southfield, MI 48076
248-557-7274 • Fax 248-557-7275

800-797-1338

FIGURE 5

TABULATION OF DATA USED IN CONDUCTIVITY OF DAYTIME CONTOURS

Call: KVOO
TULSA, OK
Coordinates: 36° 8′ 49″ 95° 48′ 27″
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.
0.0	2833.59	15.0E 45.3 30.0E 451.4 15.0E 813.8 30.0E 852.3 15.0E 1356.5
5.0	2833.59	15.0E 49.8 30.0E 250.5 15.0E 353.7 30.0E 556.3 15.0E 748.0 30.0E 895.5 8.0E 967.9 4.0E 1356.5
10.0	2833.59	15.0E 55.8 30.0E 154.7 15.0E 765.3 30.0E 868.9 15.0E 953.5 4.0E 1356.5
15.0	2833.59	15.0E 64.0 30.0E 127.0 15.0E 941.0 8.0E 967.7 4.0E 1356.5
20.0	2833.59	15.0E 80.7 30.0E 110.3 15.0E 775.0 8.0E 963.0 4.0E 1356.5
25.0	2833.59	15.0E 748.3 8.0E 831.1 4.0E 1356.5
30.0	2833.59	15.0E 651.8 8.0E 826.8 4.0E 1071.7 8.0E 1356.5
35.0	2833.59	15.0E 654.5 8.0E 1051.7 15.0E 1135.1 8.0E 1356.5
40.0	2833.59	15.0E 647.7 8.0E 977.4 15.0E 1010.3 8.0E 1170.6 2.0E 1289.9 8.0E 1356.5
45.0	2833.59	15.0E 145.2 8.0E 176.5 15.0E 233.2 8.0E 1106.9 2.0E 1152.9 8.0E 1356.5
50.0	2833.59	15.0E 126.1 8.0E 604.4 15.0E 847.8 8.0E 1014.0 2.0E 1356.5
55.0	2833.59	15.0E 102.7 8.0E 528.6 15.0E 760.1 8.0E 1356.5
60.0	2833.59	15.0E 72.9 8.0E 512.1 15.0E 681.0 8.0E 950.8 15.0E 1356.5
65.0	2833.59	15.0E 63.0 8.0E 531.8 15.0E 580.1 8.0E 1356.5
70.0	2833.59	15.0E 58.6 8.0E 1356.5
75.0	2833.59	15.0E 55.2 8.0E 828.6 4.0E 1356.5
80.0	2833.59	15.0E 52.6 8.0E 602.1 4.0E 652.5 8.0E 772.3 4.0E 1356.5
85.0	2833.59	15.0E 51.4 8.0E 587.1 4.0E 1356.5
90.0	2833.59	15.0E 50.7 8.0E 582.4 4.0E 932.1 2.0E 1356.5
95.0	2833.59	15.0E 50.4 8.0E 592.0 4.0E 870.0 2.0E 959.3 4.0E 1356.5
100.0	2833.59	15.0E 50.4 8.0E 619.4 4.0E 828.9 2.0E 928.4 4.0E 978.9 2.0E 1356.5
105.0	2833.59	15.0E 50.9 8.0E 645.7 4.0E 837.5 2.0E 886.9 4.0E 939.7 2.0E 1356.5
110.0	2833.59	15.0E 51.7 8.0E 308.6 4.0E 379.5 8.0E 651.2 2.0E 843.7 4.0E 1356.5
115.0	2833.59	15.0E 53.6 8.0E 174.7 15.0E 239.6 4.0E 436.2 8.0E 653.3 2.0E 886.5 4.0E 922.2 8.0E 1025.6 4.0E 1356.5
120.0	2833.59	15.0E 56.4 8.0E 161.0 15.0E 239.3 4.0E 463.9 8.0E 668.4 2.0E 905.2 8.0E 1036.6 4.0E 1043.5 1.0E 1356.5
125.0	2833.59	15.0E 60.1 8.0E 150.0 15.0E 239.2 4.0E 475.3 8.0E 686.8 4.0E 786.4 2.0E 924.3 1.0E 1026.6 5000.0E 1029.7 1.0E 1037.7 5000.0E 1039.7 1.0E 1048.7 5000.0E 1356.5

Call: KVOO
TULSA, OK
Coordinates: 36° 8′ 49″ 95° 48′ 27″
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.
130.0	2833.59	15.0E 66.5 8.0E 138.1 15.0E 241.0 4.0E 489.8
		8.0E 684.1 4.0E 809.9 2.0E 962.6 5000.0E 978.7
		2.0E 978.8 5000.0E 1356.5
135.0	2833.59	15.0E 75.8 8.0E 117.3 15.0E 243.8 4.0E 506.7
		8.0E 722.6 4.0E 843.4 2.0E 880.5 5000.0E 882.5
		2.0E 888.7 5000.0E 1356.5
140.0	2833.59	15.0E 248.3 4.0E 535.9 8.0E 747.1 4.0E 813.1
		15.0E 827.0 5000.0E 865.0 15.0E 922.7 5000.0E 944.5
		15.0E 948.3 5000.0E 954.5 15.0E 995.1 5000.0E 1356.5
145.0	2833.59	15.0E 259.3 4.0E 411.6 15.0E 465.2 4.0E 609.8
		8.0E 799.4 15.0E 908.5 5000.0E 1356.5
150.0	2833.59	15.0E 263.6 4.0E 389.3 8.0E 395.2 4.0E 403.8
		15.0E 571.9 4.0E 604.5 8.0E 766.7 15.0E 839.3
		5000.0E 1356.5
155.0	2833.59	15.0E 249.3 4.0E 355.0 8.0E 559.9 15.0E 718.7
		8.0E 739.7 30.0E 804.9 5000.0E 1356.5
160.0	2833.59	15.0E 237.8 4.0E 338.0 8.0E 710.7 30.0E 751.5
		5000.0E 1356.5
165.0	2833.59	15.0E 238.2 4.0E 329.4 8.0E 502.1 4.0E 543.6
		8.0E 695.3 30.0E 741.6 5000.0E 1356.5
170.0	2833.59	15.0E 247.9 30.0E 282.6 4.0E 326.0 8.0E 486.6
		4.0E 542.6 8.0E 678.7 30.0E 743.9 5000.0E 744.4
		30.0E 748.0 5000.0E 1356.5
175.0	2833.59	15.0E 254.7 30.0E 324.5 8.0E 476.5 4.0E 671.2
		15.0E 706.7 30.0E 778.3 5000.0E 1356.5
180.0	2833.59	15.0E 263.6 30.0E 383.6 8.0E 468.2 4.0E 663.4
		15.0E 792.7 30.0E 825.3 5000.0E 1356.5
185.0	2833.59	15.0E 273.1 30.0E 460.9 15.0E 467.7 4.0E 628.4
		15.0E 731.0 30.0E 838.5 5000.0E 844.3 30.0E 869.5
		5000.0E 1356.5
190.0	2833.59	15.0E 284.5 30.0E 450.5 15.0E 560.7 30.0E 594.1
		15.0E 821.9 30.0E 932.8 5000.0E 938.9 30.0E 978.9
		5000.0E 985.0 30.0E 990.8 5000.0E 1005.2 30.0E 1139.6
		20.0E 1220.1 5.0E 1356.5
195.0	2833.59	15.0E 285.4 30.0E 400.6 15.0E 543.6 30.0E 658.7
		15.0E 1130.0 20.0E 1183.8 3.0E 1356.5
200.0	2833.59	15.0E 283.4 30.0E 329.2 15.0E 577.4 8.0E 776.8
		15.0E 1055.5 3.0E 1246.6 1.5E 1356.5
205.0	2833.59	15.0E 224.9 30.0E 279.4 15.0E 283.6 30.0E 326.4
		15.0E 575.7 8.0E 816.5 15.0E 888.6 8.0E 982.8
		3.0E 1187.8 1.5E 1356.5
210.0	2833.59	15.0E 184.0 30.0E 341.2 15.0E 578.4 8.0E 927.3
		3.0E 1108.0 1.5E 1283.5 4.0E 1356.5
215.0	2833.59	15.0E 51.2 8.0E 89.6 15.0E 166.3 30.0E 358.3
		15.0E 572.1 8.0E 889.8 3.0E 1037.1 1.5E 1247.8
		4.0E 1356.5

Call: KVOO
TULSA, OK
Coordinates: 36° 8′ 49″ 95° 48′ 27″
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.									
220.0	2833.59	15.0E	42.9	8.0E	100.4	15.0E	157.7	30.0E	418.7		
		15.0E	556.6	8.0E	901.5	3.0E	1011.2	1.5E	1240.9		
		4.0E	1356.5								
225.0	2833.59	15.0E	38.0	8.0E	107.0	15.0E	157.3	30.0E	484.5		
		8.0E	1062.4	1.5E	1178.0	4.0E	1356.5				
230.0	2833.59	15.0E	34.4	8.0E	112.8	15.0E	162.0	30.0E	311.3		
		15.0E	343.0	30.0E	563.5	15.0E	731.0	8.0E	1085.7		
		1.5E	1164.4	4.0E	1356.5						
235.0	2833.59	15.0E	31.7	8.0E	116.5	15.0E	170.9	30.0E	285.5		
		15.0E	381.7	30.0E	603.5	15.0E	748.7	8.0E	1058.2		
		1.5E	1102.8	4.0E	1356.5						
240.0	2833.59	15.0E	29.5	8.0E	119.9	15.0E	175.4	30.0E	183.5		
		15.0E	383.8	30.0E	516.5	15.0E	772.2	8.0E	1067.3		
		4.0E	1356.5								
245.0	2833.59	15.0E	27.9	8.0E	123.4	15.0E	167.8	30.0E	204.3		
		15.0E	407.8	30.0E	513.4	15.0E	806.3	8.0E	1091.6		
		4.0E	1356.5								
250.0	2833.59	15.0E	26.6	8.0E	128.3	15.0E	163.5	30.0E	225.1		
		15.0E	428.5	30.0E	599.3	15.0E	861.2	8.0E	898.9		
		4.0E	1266.0	8.0E	1356.5						
255.0	2833.59	15.0E	25.6	8.0E	119.7	30.0E	233.3	15.0E	446.5		
		30.0E	662.5	15.0E	833.2	8.0E	915.5	4.0E	1194.4		
		8.0E	1356.5								
260.0	2833.59	15.0E	24.8	8.0E	112.2	30.0E	243.4	15.0E	467.8		
		30.0E	624.9	15.0E	804.0	8.0E	896.7	15.0E	1105.7		
		8.0E	1186.1	4.0E	1356.5						
265.0	2833.59	15.0E	24.3	8.0E	106.4	30.0E	256.3	15.0E	388.5		
		30.0E	587.4	15.0E	832.1	8.0E	846.6	15.0E	1077.8		
		8.0E	1356.5								
270.0	2833.59	15.0E	24.0	8.0E	102.7	30.0E	273.0	15.0E	371.3		
		30.0E	563.7	15.0E	846.7	2.0E	905.2	4.0E	924.8		
		15.0E	1079.1	8.0E	1356.5						
275.0	2833.59	15.0E	23.8	8.0E	100.2	30.0E	296.5	15.0E	371.9		
		30.0E	548.6	15.0E	824.8	2.0E	905.6	4.0E	1040.2		
		15.0E	1356.5								
280.0	2833.59	15.0E	23.9	8.0E	98.6	30.0E	331.7	15.0E	380.0		
		30.0E	533.3	15.0E	790.7	2.0E	860.6	4.0E	917.5		
		2.0E	985.9	4.0E	1356.5						
285.0	2833.59	15.0E	24.1	8.0E	97.7	30.0E	505.9	15.0E	827.5		
		8.0E	869.8	2.0E	870.9	4.0E	947.8	2.0E	1074.9		
		4.0E	1356.5								
290.0	2833.59	15.0E	24.5	8.0E	97.6	30.0E	472.3	15.0E	875.2		
		8.0E	946.7	2.0E	1060.3	8.0E	1130.1	15.0E	1356.5		
295.0	2833.59	15.0E	25.1	8.0E	95.2	30.0E	446.1	15.0E	913.8		
		8.0E	977.5	2.0E	1116.2	8.0E	1356.5				
300.0	2833.59	15.0E	26.0	8.0E	74.2	30.0E	465.9	15.0E	919.5		
		8.0E	1014.7	2.0E	1115.3	8.0E	1161.0	15.0E	1356.5		

Call: KVOO
TULSA, OK
Coordinates: 36° 8′ 49″ 95° 48′ 27″
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.							
305.0	2833.59	15.0E	27.2	8.0E	59.2	30.0E	515.7	15.0E	813.3
		8.0E	1012.2	15.0E	1031.4	2.0E	1137.2	15.0E	1356.5
310.0	2833.59	15.0E	28.6	8.0E	48.6	30.0E	554.4	15.0E	803.7
		8.0E	1047.9	15.0E	1356.5				
315.0	2833.59	15.0E	30.3	8.0E	41.5	30.0E	599.5	15.0E	778.1
		8.0E	1051.8	15.0E	1249.8	8.0E	1356.5		
320.0	2833.59	15.0E	32.0	8.0E	36.4	30.0E	657.9	15.0E	753.4
		4.0E	898.9	8.0E	998.3	15.0E	1054.9	8.0E	1086.5
		15.0E	1250.8	8.0E	1356.5				
325.0	2833.59	15.0E	33.4	30.0E	702.9	4.0E	946.6	8.0E	1009.0
		15.0E	1054.4	8.0E	1220.0	15.0E	1356.5		
330.0	2833.59	15.0E	33.2	30.0E	405.8	15.0E	463.6	30.0E	706.1
		4.0E	907.0	8.0E	1032.2	15.0E	1165.5	8.0E	1356.5
335.0	2833.59	15.0E	34.1	30.0E	376.7	15.0E	529.0	30.0E	697.3
		4.0E	794.3	8.0E	895.0	15.0E	1077.5	8.0E	1356.5
340.0	2833.59	15.0E	35.4	30.0E	374.8	15.0E	537.0	30.0E	556.9
		15.0E	641.8	30.0E	661.2	4.0E	728.8	8.0E	797.9
		15.0E	965.4	30.0E	1356.5				
345.0	2833.59	15.0E	37.0	30.0E	379.1	15.0E	510.5	30.0E	585.6
		15.0E	779.5	30.0E	1356.5				
350.0	2833.59	15.0E	39.1	30.0E	387.8	15.0E	498.4	30.0E	592.2
		15.0E	758.0	30.0E	917.1	15.0E	1020.7	30.0E	1356.5
355.0	2833.59	15.0E	41.8	30.0E	400.6	15.0E	511.4	30.0E	555.1
		15.0E	746.3	30.0E	807.3	15.0E	1356.5		

Call: KOWZ
WASECA, MN
Coordinates: 44° 2′ 45″ N 93° 23′ 8″ W
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.
0.0	498.00	15.0E 67.5 4.0E 248.2 8.0E 507.8 20.0E 546.2 2.0E 1080.8
5.0	498.00	15.0E 68.3 4.0E 222.3 8.0E 505.1 2.0E 1080.8
10.0	498.00	15.0E 68.2 4.0E 214.8 8.0E 486.3 2.0E 1080.8
15.0	498.00	15.0E 67.6 4.0E 219.6 8.0E 474.6 2.0E 1080.8
20.0	498.00	15.0E 65.3 4.0E 237.3 8.0E 489.1 2.0E 1080.8
25.0	498.00	15.0E 63.0 4.0E 265.5 8.0E 502.6 2.0E 1080.8
30.0	498.00	15.0E 61.3 4.0E 313.1 8.0E 515.3 2.0E 781.8 2.0E 1080.8
35.0	498.00	15.0E 60.1 4.0E 354.8 8.0E 354.9 4.0E 358.2 8.0E 638.0 2.0E 666.3 8.0E 683.9 2.0E 820.6 2.0E 1080.8
40.0	498.00	15.0E 59.0 4.0E 382.4 8.0E 710.3 2.0E 876.2 2.0E 1080.8
45.0	498.00	15.0E 58.3 4.0E 555.3 8.0E 739.6 2.0E 936.2 6.0E 1080.8
50.0	498.00	15.0E 57.8 8.0E 93.6 4.0E 508.7 8.0E 726.9 2.0E 1015.0 6.0E 1080.8
55.0	498.00	15.0E 57.6 8.0E 116.4 4.0E 542.6 8.0E 766.0 2.0E 1080.8
60.0	498.00	15.0E 57.2 8.0E 130.0 4.0E 556.2 8.0E 754.0 2.0E 1080.8
65.0	498.00	15.0E 56.1 8.0E 136.9 4.0E 490.3 8.0E 740.7 2.0E 1080.8
70.0	498.00	15.0E 55.5 8.0E 140.2 4.0E 432.0 8.0E 802.3 10.0E 842.3 2.0E 1080.8
75.0	498.00	15.0E 55.3 8.0E 138.8 4.0E 385.3 8.0E 835.2 10.0E 903.6 4.0E 1080.8
80.0	498.00	15.0E 55.5 8.0E 137.3 4.0E 356.2 8.0E 579.0 2.0E 606.9 8.0E 881.1 10.0E 1080.8
85.0	498.00	15.0E 56.0 8.0E 136.4 4.0E 340.1 8.0E 400.7 15.0E 456.9 8.0E 563.6 2.0E 650.6 8.0E 889.9 10.0E 1080.8
90.0	498.00	15.0E 56.5 8.0E 136.5 4.0E 329.7 8.0E 393.6 15.0E 453.9 8.0E 557.6 2.0E 620.3 8.0E 801.3 15.0E 869.6 8.0E 903.0 10.0E 1080.8
95.0	498.00	15.0E 57.6 8.0E 137.6 4.0E 315.1 8.0E 412.6 15.0E 452.9 8.0E 564.0 2.0E 616.9 8.0E 831.1 15.0E 890.2 20.0E 1080.8
100.0	498.00	15.0E 59.1 8.0E 139.9 4.0E 303.0 8.0E 433.7 15.0E 451.4 8.0E 592.3 2.0E 628.3 8.0E 856.5 20.0E 915.0 10.0E 969.4 8.0E 1080.8
105.0	498.00	15.0E 61.0 8.0E 143.3 4.0E 294.0 8.0E 445.0 15.0E 469.2 8.0E 603.1 2.0E 702.7 4.0E 767.1 8.0E 853.5 15.0E 896.4 8.0E 905.1 15.0E 918.1 8.0E 1080.8

Call: KOWZ
WASECA, MN
Coordinates: 44° 2′ 45″ N 93° 23′ 8″ W
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.							
110.0	498.00	15.0E	62.8	8.0E	148.0	4.0E	291.5	8.0E	456.9
		15.0E	487.0	8.0E	600.8	2.0E	691.4	8.0E	866.6
		15.0E	939.8	8.0E	1080.8				
115.0	498.00	15.0E	65.1	8.0E	154.3	4.0E	290.4	8.0E	742.8
		15.0E	910.0	8.0E	1080.8				
120.0	498.00	15.0E	68.2	8.0E	162.5	4.0E	287.4	8.0E	506.7
		15.0E	542.9	8.0E	724.0	15.0E	798.9	8.0E	1080.8
125.0	498.00	15.0E	72.2	8.0E	173.2	4.0E	280.9	8.0E	502.6
		15.0E	555.5	8.0E	722.0	15.0E	731.4	8.0E	1080.8
130.0	498.00	15.0E	78.0	8.0E	196.0	4.0E	264.8	8.0E	503.1
		15.0E	572.0	8.0E	970.8	4.0E	1080.8		
135.0	498.00	15.0E	86.1	8.0E	501.8	15.0E	598.0	8.0E	866.8
		4.0E	1080.8						
140.0	498.00	15.0E	96.9	8.0E	504.1	15.0E	634.0	8.0E	907.3
		4.0E	1080.8						
145.0	498.00	15.0E	110.4	8.0E	513.2	15.0E	667.2	8.0E	938.3
		4.0E	1080.8						
150.0	498.00	15.0E	128.8	8.0E	540.3	15.0E	695.3	8.0E	929.7
		4.0E	1080.8						
155.0	498.00	15.0E	155.9	8.0E	203.4	15.0E	274.3	8.0E	378.8
		15.0E	489.3	8.0E	579.1	15.0E	722.3	8.0E	886.9
		4.0E	1080.8						
160.0	498.00	15.0E	495.2	8.0E	655.1	15.0E	662.1	8.0E	1080.8
165.0	498.00	15.0E	517.9	8.0E	1080.8				
170.0	498.00	15.0E	570.2	8.0E	1080.8				
175.0	498.00	15.0E	608.2	8.0E	997.5	4.0E	1080.8		
180.0	498.00	15.0E	652.1	8.0E	964.3	15.0E	977.2	4.0E	1080.8
185.0	498.00	15.0E	744.9	8.0E	964.2	15.0E	1080.8		
190.0	498.00	15.0E	844.0	8.0E	947.5	15.0E	1080.8		
195.0	498.00	15.0E	729.0	30.0E	866.2	15.0E	1080.8		
200.0	498.00	15.0E	371.7	30.0E	886.0	8.0E	979.8	15.0E	1034.6
		30.0E	1080.8						
205.0	498.00	15.0E	355.9	30.0E	1036.4	15.0E	1080.8		
210.0	498.00	15.0M	15.9	10.0M	62.0	15.0E	104.5	30.0E	156.7
		15.0E	573.9	30.0E	993.6	15.0E	1080.8		
215.0	498.00	15.0M	15.9	10.0M	62.0	15.0E	79.3	30.0E	168.8
		15.0E	412.9	30.0E	449.2	15.0E	646.2	30.0E	970.4
		15.0E	1025.3	30.0E	1080.8				
220.0	498.00	15.0M	15.9	10.0M	62.0	15.0E	65.6	30.0E	179.9
		15.0E	407.5	30.0E	498.6	15.0E	662.8	30.0E	1080.8
225.0	498.00	15.0M	15.9	10.0M	62.0	30.0E	186.9	15.0E	413.5
		30.0E	523.9	15.0E	614.6	30.0E	875.5	15.0E	1080.8
230.0	498.00	15.0M	15.9	10.0M	62.0	30.0E	188.2	15.0E	555.2
		30.0E	828.0	15.0E	1080.8				
235.0	498.00	15.0E	50.6	30.0E	188.0	15.0E	514.2	30.0E	769.6
		15.0E	1080.8						

Call: KOWZ
WASECA, MN
Coordinates: 44° 2′ 45″ N 93° 23′ 8″ W
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.
240.0	498.00	15.0E 49.7 30.0E 189.1 15.0E 454.2 4.0E 493.6 30.0E 724.0 15.0E 1080.8
245.0	498.00	15.0E 50.5 30.0E 193.0 15.0E 282.1 30.0E 316.6 15.0E 443.6 8.0E 456.6 4.0E 553.1 30.0E 643.2 4.0E 704.2 15.0E 1080.8
250.0	498.00	15.0E 51.8 30.0E 199.6 15.0E 271.3 30.0E 372.0 15.0E 429.5 8.0E 505.3 4.0E 773.5 8.0E 1080.8
255.0	498.00	15.0E 55.2 30.0E 210.9 15.0E 274.3 30.0E 422.3 15.0E 469.6 8.0E 554.3 4.0E 812.9 8.0E 1080.8
260.0	498.00	15.0E 61.3 30.0E 207.4 15.0E 279.7 30.0E 452.6 15.0E 516.3 8.0E 597.0 4.0E 767.6 8.0E 1080.8
265.0	498.00	15.0E 62.8 8.0E 69.9 30.0E 190.9 15.0E 310.9 30.0E 479.7 15.0E 577.7 8.0E 772.7 15.0E 869.8 8.0E 917.7 15.0E 1080.8
270.0	498.00	15.0E 57.2 8.0E 83.2 30.0E 179.5 15.0E 329.6 30.0E 477.3 15.0E 635.0 8.0E 762.6 15.0E 799.7 8.0E 890.8 15.0E 1080.8
275.0	498.00	15.0E 53.6 8.0E 103.6 30.0E 170.6 15.0E 351.4 30.0E 532.7 15.0E 803.1 8.0E 1080.8
280.0	498.00	15.0E 51.1 8.0E 138.8 30.0E 165.5 15.0E 378.8 30.0E 566.9 15.0E 875.7 8.0E 888.2 15.0E 1080.8
285.0	498.00	15.0E 49.2 8.0E 163.4 15.0E 387.9 30.0E 563.6 15.0E 628.4 8.0E 1080.8
290.0	498.00	15.0E 49.3 8.0E 163.4 15.0E 390.1 30.0E 578.4 15.0E 596.8 8.0E 1080.8
295.0	498.00	15.0E 50.5 8.0E 166.7 15.0E 404.4 30.0E 631.4 8.0E 1080.8
300.0	498.00	15.0E 55.0 8.0E 171.7 15.0E 431.0 30.0E 757.6 8.0E 1080.8
305.0	498.00	15.0E 61.1 8.0E 172.1 4.0E 185.9 15.0E 436.7 30.0E 1080.8
310.0	498.00	15.0E 75.8 4.0E 86.8 8.0E 115.0 4.0E 235.6 15.0E 280.0 30.0E 390.2 15.0E 404.3 30.0E 924.0 40.0E 1080.8
315.0	498.00	15.0E 71.2 4.0E 299.2 30.0E 820.9 40.0E 1080.8
320.0	498.00	15.0E 67.6 4.0E 357.0 30.0E 745.4 40.0E 1080.8
325.0	498.00	15.0E 65.2 4.0E 395.4 30.0E 463.7 15.0E 539.7 30.0E 689.9 40.0E 1080.8
330.0	498.00	15.0E 64.7 4.0E 428.0 30.0E 435.1 15.0E 481.1 30.0E 496.4 15.0E 613.4 30.0E 646.6 40.0E 1080.8
335.0	498.00	15.0E 64.7 4.0E 452.2 8.0E 510.9 30.0E 614.1 40.0E 1080.8
340.0	498.00	15.0E 65.3 4.0E 439.4 8.0E 589.9 40.0E 1080.8
345.0	498.00	15.0E 65.3 4.0E 428.8 8.0E 572.3 20.0E 1080.8
350.0	498.00	15.0E 65.8 4.0E 385.9 8.0E 529.4 20.0E 578.1 2.0E 1080.8
355.0	498.00	15.0E 66.7 4.0E 302.7 8.0E 510.8 20.0E 558.5 2.0E 1080.8

Call: KJOC
DAVENPORT,IA
Coordinates: 41° 23′ 21″ N 90° 31′ 0″ W
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.							
0.0	690.04	8.0E	134.5	4.0E	577.1	8.0E	747.1	2.0E	857.7
5.0	636.55	8.0E	146.0	4.0E	603.7	8.0E	739.3	2.0E	857.7
10.0	573.54	8.0E	170.2	4.0E	632.1	8.0E	815.6	2.0E	857.7
15.0	504.96	8.0E	234.6	4.0E	634.2	8.0E	663.2	4.0E	663.4
		8.0E	672.3	4.0E	702.4	8.0E	857.7		
20.0	435.35	8.0E	389.7	4.0E	643.3	8.0E	879.4		
25.0	369.72	8.0E	611.1	4.0E	636.8	8.0E	820.7	2.0E	857.7
30.0	313.37	8.0E	328.8	15.0E	394.2	8.0E	831.3	2.0E	857.7
35.0	271.20	8.0E	310.1	15.0E	395.2	8.0E	772.6	2.0E	857.7
40.0	246.04	8.0E	296.0	15.0E	351.6	8.0E	761.6	2.0E	857.7
45.0	236.60	8.0E	277.9	15.0E	300.4	8.0E	476.9	2.0E	540.4
		8.0E	764.3	10.0E	791.7	2.0E	857.7		
50.0	237.54	8.0E	256.0	15.0E	281.4	8.0E	429.4	2.0E	547.6
		8.0E	760.4	10.0E	800.2	4.0E	806.6	10.0E	807.7
		4.0E	832.0	10.0E	835.5	4.0E	836.3	10.0E	857.7
55.0	242.33	8.0E	237.7	15.0E	274.3	8.0E	403.2	2.0E	475.1
		8.0E	770.1	10.0E	857.7				
60.0	245.88	8.0E	225.1	15.0E	256.6	8.0E	398.4	2.0E	442.6
		8.0E	754.0	10.0E	839.4	4.0E	857.7		
65.0	245.19	8.0E	228.2	15.0E	243.2	8.0E	387.4	2.0E	424.7
		8.0E	632.0	15.0E	698.7	8.0E	735.8	10.0E	773.7
		6.0E	847.8	4.0E	857.7				
70.0	238.94	8.0E	371.2	2.0E	437.7	8.0E	627.6	15.0E	688.6
		8.0E	709.1	10.0E	755.8	6.0E	850.5	4.0E	857.7
75.0	227.01	8.0E	346.2	2.0E	487.8	8.0E	492.2	4.0E	518.2
		8.0E	633.2	15.0E	653.6	20.0E	665.5	15.0E	677.5
		20.0E	804.9	4.0E	857.7				
80.0	210.06	8.0E	210.0	15.0E	240.7	8.0E	320.4	2.0E	437.4
		4.0E	523.0	8.0E	619.1	20.0E	689.4	10.0E	814.4
		8.0E	857.7						
85.0	189.34	8.0E	187.2	15.0E	236.9	8.0E	375.9	2.0E	411.7
		8.0E	592.6	15.0E	609.2	8.0E	857.7		
90.0	166.52	8.0E	174.5	15.0E	225.8	8.0E	573.7	15.0E	641.8
		8.0E	857.7						
95.0	143.61	8.0E	164.6	15.0E	220.5	8.0E	434.4	15.0E	478.3
		8.0E	567.2	15.0E	644.7	8.0E	800.5	4.0E	857.7
100.0	122.85	8.0E	156.4	15.0E	216.8	8.0E	404.4	15.0E	614.2
		8.0E	752.0	4.0E	833.7	2.0E	857.7		
105.0	106.49	8.0E	148.5	15.0E	214.0	8.0E	383.6	15.0E	473.7
		8.0E	703.2	2.0E	857.7				
110.0	96.11	8.0E	141.6	15.0E	212.9	8.0E	369.5	15.0E	406.2
		8.0E	649.5	2.0E	857.7				
115.0	91.79	8.0E	136.3	15.0E	213.4	8.0E	659.7	2.0E	857.7
120.0	92.01	8.0E	132.3	15.0E	216.0	8.0E	689.5	2.0E	857.7
125.0	94.77	8.0E	129.5	15.0E	221.4	8.0E	609.5	4.0E	648.8
		8.0E	715.6	2.0E	829.5	4.0E	857.7		
130.0	98.74	8.0E	127.8	15.0E	230.5	8.0E	498.8	4.0E	676.5
		8.0E	686.9	2.0E	857.7				

Call: KJOC
DAVENPORT,IA
Coordinates: 41° 23′ 21″ N 90° 31′ 0″ W
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.							
135.0	103.52	8.0E	127.0	15.0E	241.4	8.0E	497.5	4.0E	705.6
		2.0E	857.7						
140.0	112.65	8.0E	127.2	15.0E	253.9	8.0E	522.8	4.0E	767.8
		2.0E	857.7						
145.0	117.81	8.0E	128.3	15.0E	268.7	8.0E	546.6	4.0E	772.0
		2.0E	842.4	4.0E	857.7				
150.0	129.04	8.0E	130.4	15.0E	284.5	8.0E	563.5	4.0E	789.0
		2.0E	857.7						
155.0	138.36	8.0E	135.0	15.0E	300.0	8.0E	571.9	4.0E	818.3
		2.0E	857.7						
160.0	142.59	8.0E	142.2	15.0E	319.4	8.0E	540.4	4.0E	857.7
165.0	140.95	8.0E	154.7	15.0E	338.3	8.0E	498.6	4.0E	825.4
		2.0E	857.7						
170.0	135.12	8.0E	171.3	15.0E	360.7	8.0E	614.7	4.0E	698.8
		8.0E	799.7	2.0E	857.7				
175.0	128.48	8.0E	193.0	15.0E	378.2	8.0E	857.7		
180.0	123.43	8.0E	228.3	15.0E	357.2	8.0E	857.7		
185.0	117.48	8.0E	291.5	15.0E	317.6	8.0E	857.7		
190.0	110.42	8.0E	729.3	4.0E	857.7				
195.0	103.67	8.0E	107.9	15.0E	158.5	8.0E	717.4	4.0E	857.7
200.0	98.74	8.0E	99.0	15.0E	174.6	8.0E	714.4	4.0E	857.7
205.0	94.77	8.0E	92.8	15.0E	192.2	8.0E	719.9	15.0E	857.7
210.0	92.01	8.0E	89.9	15.0E	317.7	8.0E	765.2	15.0E	857.7
215.0	91.79	8.0E	87.8	15.0E	421.4	8.0E	745.5	15.0E	857.7
220.0	96.11	8.0E	86.9	15.0E	785.9	8.0E	837.7	15.0E	857.7
225.0	106.49	8.0E	87.3	15.0E	618.9	30.0E	749.0	8.0E	838.2
		30.0E	852.1	15.0E	857.7				
230.0	122.85	8.0E	88.4	15.0E	574.8	30.0E	857.7		
235.0	143.62	8.0E	90.8	15.0E	535.8	30.0E	857.7		
240.0	166.97	8.0E	96.4	15.0E	500.3	30.0E	857.7		
245.0	190.52	8.0E	102.8	15.0E	459.2	30.0E	857.7		
250.0	211.95	8.0E	109.2	15.0E	423.4	30.0E	857.7		
255.0	229.36	8.0E	116.0	15.0E	392.5	30.0E	465.6	15.0E	705.6
		30.0E	857.7						
260.0	241.40	8.0E	120.4	15.0E	373.4	30.0E	447.5	15.0E	688.0
		30.0E	857.7						
265.0	247.38	8.0E	122.5	15.0E	374.8	30.0E	430.5	15.0E	478.0
		30.0E	627.9	15.0E	670.4	30.0E	857.7		
270.0	247.50	8.0E	124.7	15.0E	506.5	30.0E	601.8	15.0E	661.1
		30.0E	857.7						
275.0	243.25	8.0E	126.1	15.0E	660.5	30.0E	857.7		
280.0	237.85	8.0E	127.5	15.0E	641.6	4.0E	857.7		
285.0	236.61	8.0E	129.0	15.0E	669.7	8.0E	857.7		
290.0	246.04	8.0E	130.2	15.0E	525.4	30.0E	739.6	15.0E	857.7
295.0	271.20	8.0E	132.4	15.0E	397.4	30.0E	401.1	15.0E	545.2
		30.0E	775.7	15.0E	857.7				
300.0	313.37	8.0E	136.0	15.0E	346.5	30.0E	500.6	15.0E	659.4
		30.0E	857.7						

Call: KJOC
DAVENPORT,IA
Coordinates: 41° 23′ 21″ N 90° 31 0″ W
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.							
305.0	369.72	8.0E	143.2	15.0E	350.5	30.0E	509.8	15.0E	730.3
		30.0E	857.7						
310.0	435.35	8.0E	219.3	15.0E	362.7	30.0E	513.2	15.0E	774.0
		30.0E	857.7						
315.0	504.96	8.0E	238.2	15.0E	384.3	30.0E	412.2	15.0E	415.8
		8.0E	533.8	15.0E	802.9	30.0E	857.7		
320.0	573.54	8.0E	262.9	15.0E	429.7	8.0E	492.6	4.0E	673.7
		30.0E	857.7						
325.0	636.55	8.0E	298.3	15.0E	439.5	4.0E	773.3	30.0E	839.8
		15.0E	857.7						
330.0	690.04	8.0E	346.2	15.0E	420.6	4.0E	825.8	8.0E	864.9
335.0	730.73	8.0E	156.2	4.0E	214.8	8.0E	389.4	4.0E	792.7
		8.0E	857.7						
340.0	756.16	8.0E	134.6	4.0E	269.4	8.0E	386.0	4.0E	542.2
		8.0E	857.7						
345.0	764.80	8.0E	126.5	4.0E	538.2	8.0E	831.9	20.0E	857.7
350.0	756.16	8.0E	123.6	4.0E	552.4	8.0E	775.1	2.0E	857.7
355.0	730.73	8.0E	126.9	4.0E	574.5	8.0E	745.5	2.0E	857.7

Call: WMRH
WAUPUN, WI
Coordinates: 43° 38′ 30″ N 88° 43′ 22″ W
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.							
0.0	302.56	8.0E	127.1	4.0E	395.7	8.0E	528.7	2.0E	866.7
5.0	302.56	8.0E	144.3	4.0E	364.6	8.0E	389.4	4.0E	424.3
		8.0E	594.5	2.0E	711.0	2.0E	866.7		
10.0	302.56	8.0E	167.0	4.0E	368.0	8.0E	425.3	4.0E	429.3
		8.0E	583.0	2.0E	711.6	2.0E	866.7		
15.0	302.56	8.0E	199.9	4.0E	350.0	8.0E	593.6	2.0E	720.5
		2.0E	866.7						
20.0	302.56	8.0E	263.1	4.0E	339.0	8.0E	557.3	2.0E	735.7
		2.0E	866.7						
25.0	302.56	8.0E	46.6	15.0E	87.2	8.0E	529.6	2.0E	749.7
		6.0E	866.7						
30.0	302.56	8.0E	40.4	15.0E	101.5	8.0E	560.1	2.0E	772.6
		6.0E	866.7						
35.0	302.56	8.0E	37.1	15.0E	108.6	8.0E	519.2	2.0E	799.3
		6.0E	866.7						
40.0	302.56	8.0E	34.8	15.0E	110.3	8.0E	486.1	2.0E	781.9
		6.0E	866.7						
45.0	302.56	8.0E	32.9	15.0E	109.7	8.0E	455.8	2.0E	820.3
		6.0E	866.7						
50.0	302.56	8.0E	31.5	15.0E	109.2	8.0E	462.6	2.0E	480.8
		10.0E	481.5	2.0E	866.7				
55.0	302.56	8.0E	30.4	15.0E	109.5	8.0E	489.9	10.0E	519.8
		2.0E	866.7						
60.0	302.56	8.0E	30.0	15.0E	99.3	8.0E	226.5	2.0E	256.1
		8.0E	485.2	10.0E	516.7	4.0E	531.4	10.0E	589.4
		2.0E	866.7						
65.0	302.56	8.0E	30.1	15.0E	91.7	8.0E	216.3	2.0E	283.7
		8.0E	504.5	10.0E	565.6	4.0E	608.3	10.0E	670.3
		2.0E	672.9	10.0E	675.0	2.0E	866.7		
70.0	302.56	8.0E	30.5	15.0E	85.9	8.0E	201.3	2.0E	292.8
		8.0E	522.8	10.0E	583.4	4.0E	593.9	10.0E	691.1
		2.0E	734.2	1.0E	866.7				
75.0	302.56	8.0E	31.1	15.0E	83.7	8.0E	183.9	2.0E	287.4
		8.0E	524.9	10.0E	606.2	4.0E	627.6	10.0E	714.6
		1.0E	866.7						
80.0	302.56	8.0E	32.0	15.0E	83.9	8.0E	185.4	2.0E	267.4
		8.0E	523.4	10.0E	574.6	6.0E	609.0	4.0E	741.0
		6.0E	866.7						
85.0	302.56	8.0E	32.9	15.0E	84.1	8.0E	185.8	2.0E	248.3
		8.0E	431.3	15.0E	487.2	8.0E	526.0	10.0E	562.8
		6.0E	659.9	4.0E	716.2	6.0E	785.1	15.0E	866.7
90.0	302.56	8.0E	34.2	15.0E	80.1	8.0E	176.4	2.0E	240.2
		8.0E	430.4	15.0E	497.1	8.0E	527.7	10.0E	565.1
		6.0E	643.0	4.0E	693.5	20.0E	722.8	15.0E	771.9
		20.0E	781.1	8.0E	866.7				

Call: WMRH
WAUPUN, WI
Coordinates: 43° 38′ 30″ N 88° 43′ 22″ W
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.							
95.0	302.56	8.0E	35.8	15.0E	76.7	8.0E	183.4	2.0E	238.9
		8.0E	443.7	15.0E	510.1	8.0E	515.7	10.0E	528.4
		20.0E	634.2	4.0E	694.4	20.0E	696.6	10.0E	766.3
		8.0E	808.0	4.0E	866.7				
100.0	302.56	8.0E	37.9	15.0E	76.1	8.0E	192.4	2.0E	242.3
		8.0E	464.7	15.0E	515.8	20.0E	589.9	10.0E	681.8
		8.0E	727.9	4.0E	866.7				
105.0	302.56	8.0E	40.6	15.0E	76.0	8.0E	205.1	2.0E	247.8
		8.0E	489.4	20.0E	550.8	10.0E	605.2	8.0E	764.7
		2.0E	866.7						
110.0	302.56	8.0E	44.1	15.0E	75.4	8.0E	216.9	2.0E	254.5
		8.0E	368.2	4.0E	403.2	8.0E	492.7	10.0E	566.5
		8.0E	762.4	4.0E	840.0	2.0E	866.7		
115.0	302.56	8.0E	48.4	15.0E	75.1	8.0E	226.2	2.0E	343.9
		4.0E	403.8	8.0E	490.4	15.0E	530.7	8.0E	537.9
		15.0E	550.7	8.0E	737.4	4.0E	866.7		
120.0	302.56	8.0E	52.3	15.0E	77.8	8.0E	234.7	2.0E	337.1
		4.0E	392.3	8.0E	490.0	15.0E	566.8	8.0E	719.3
		4.0E	798.6	2.0E	866.7				
125.0	302.56	8.0E	57.4	15.0E	81.4	8.0E	242.4	2.0E	336.8
		4.0E	363.3	8.0E	514.7	15.0E	597.1	8.0E	705.0
		4.0E	745.4	2.0E	866.7				
130.0	302.56	8.0E	64.1	15.0E	90.0	8.0E	248.1	2.0E	341.9
		8.0E	497.4	15.0E	577.8	8.0E	689.3	2.0E	866.7
135.0	302.56	8.0E	71.6	15.0E	97.3	8.0E	254.9	2.0E	316.3
		8.0E	412.0	15.0E	535.2	8.0E	662.9	2.0E	866.7
140.0	302.56	8.0E	79.6	15.0E	111.2	8.0E	260.4	2.0E	280.9
		8.0E	408.7	15.0E	494.8	8.0E	691.0	2.0E	866.7
145.0	302.56	8.0E	88.9	15.0E	132.4	8.0E	412.5	15.0E	471.5
		8.0E	767.2	2.0E	866.7				
150.0	302.56	8.0E	100.0	15.0E	151.1	8.0E	420.6	15.0E	456.9
		8.0E	702.0	4.0E	747.5	8.0E	802.2	2.0E	866.7
155.0	302.56	8.0E	115.3	15.0E	171.8	8.0E	661.0	4.0E	814.1
		2.0E	866.7						
160.0	302.56	8.0E	138.3	15.0E	165.2	8.0E	224.7	15.0E	250.1
		8.0E	621.5	4.0E	866.7				
165.0	302.56	8.0E	224.3	15.0E	276.4	8.0E	683.8	4.0E	866.7
170.0	302.56	8.0E	235.9	15.0E	316.0	8.0E	746.7	4.0E	866.7
175.0	302.56	8.0E	256.7	15.0E	370.1	8.0E	777.1	4.0E	866.7
180.0	302.56	8.0E	283.4	15.0E	472.0	8.0E	726.2	4.0E	866.7
185.0	302.56	8.0E	309.9	15.0E	555.5	8.0E	866.7		
190.0	302.56	8.0E	344.0	15.0E	630.4	8.0E	866.7		
195.0	302.56	8.0E	394.9	15.0E	623.0	8.0E	866.7		
200.0	302.56	8.0E	866.7						
205.0	302.56	8.0E	418.5	15.0E	428.5	8.0E	866.7		
210.0	302.56	8.0E	382.6	15.0E	493.8	8.0E	866.7		
215.0	302.56	8.0E	375.0	15.0E	761.9	8.0E	812.8	15.0E	837.2
		8.0E	866.7						

Call: WMRH
WAUPUN, WI
Coordinates: 43° 38′ 30″ N 88° 43′ 22″ W
Frequency: 1170 kHz

Azimuth	Radiation (mV/m at one km)	Ground Conductivity Data: Region conductivity in mS/m followed by distance in km to the end of region. E - map data; M - measurement data.							
220.0	302.56	8.0E	379.0	15.0E	866.7				
225.0	302.56	8.0E	379.4	15.0E	844.9	30.0E	866.7		
230.0	302.56	8.0E	359.3	15.0E	769.5	30.0E	866.7		
235.0	302.56	8.0E	141.8	4.0E	219.5	8.0E	327.0	15.0E	672.8
		30.0E	866.7						
240.0	302.56	8.0E	121.3	4.0E	232.5	8.0E	310.0	15.0E	598.8
		30.0E	690.5	15.0E	866.7				
245.0	302.56	8.0E	108.0	4.0E	238.9	8.0E	322.0	15.0E	614.1
		30.0E	626.1	15.0E	866.7				
250.0	302.56	8.0E	96.5	4.0E	242.2	8.0E	332.6	15.0E	697.2
		30.0E	832.9	15.0E	872.2				
255.0	302.56	8.0E	86.2	4.0E	242.6	8.0E	325.6	15.0E	838.0
		30.0E	866.7						
260.0	302.56	8.0E	78.4	4.0E	240.2	8.0E	319.2	15.0E	780.6
		4.0E	879.7						
265.0	302.56	8.0E	72.4	4.0E	237.4	8.0E	315.4	15.0E	432.9
		30.0E	532.5	15.0E	639.7	30.0E	676.4	15.0E	786.9
		8.0E	887.8						
270.0	302.56	8.0E	67.8	4.0E	236.4	8.0E	315.5	15.0E	419.2
		30.0E	565.8	15.0E	641.2	30.0E	820.1	15.0E	866.7
275.0	302.56	8.0E	64.1	4.0E	237.2	8.0E	316.1	15.0E	421.0
		30.0E	565.5	15.0E	696.4	30.0E	866.7		
280.0	302.56	8.0E	61.3	4.0E	239.8	8.0E	321.2	15.0E	424.3
		8.0E	522.1	30.0E	541.4	15.0E	745.5	30.0E	866.7
285.0	302.56	8.0E	59.1	4.0E	244.4	8.0E	335.5	15.0E	424.9
		4.0E	453.3	8.0E	536.6	15.0E	760.4	30.0E	866.7
290.0	302.56	8.0E	57.6	4.0E	252.0	8.0E	320.9	4.0E	564.7
		15.0E	778.9	30.0E	866.7				
295.0	302.56	8.0E	56.5	4.0E	628.6	30.0E	702.2	15.0E	781.2
		30.0E	866.7						
300.0	302.56	8.0E	55.8	4.0E	676.0	30.0E	866.7		
305.0	302.56	8.0E	55.6	4.0E	701.9	30.0E	866.7		
310.0	302.56	8.0E	56.7	4.0E	409.8	8.0E	463.8	4.0E	740.0
		8.0E	741.9	15.0E	753.5	30.0E	777.3	15.0E	852.1
		30.0E	866.7						
315.0	302.56	8.0E	58.8	4.0E	389.2	8.0E	560.5	4.0E	674.5
		8.0E	787.8	30.0E	848.3	15.0E	866.7		
320.0	302.56	8.0E	61.4	4.0E	379.8	8.0E	807.8	20.0E	819.2
		40.0E	866.7						
325.0	302.56	8.0E	64.9	4.0E	376.2	8.0E	692.9	20.0E	766.6
		8.0E	801.0	2.0E	811.6	20.0E	866.7		
330.0	302.56	8.0E	69.3	4.0E	374.7	8.0E	648.6	20.0E	697.9
		2.0E	866.7						
335.0	302.56	8.0E	75.0	4.0E	368.4	8.0E	570.3	2.0E	577.6
		8.0E	585.3	2.0E	866.7				
340.0	302.56	8.0E	82.4	4.0E	351.4	8.0E	534.7	2.0E	866.7
345.0	302.56	8.0E	91.4	4.0E	356.6	8.0E	515.7	2.0E	866.7
350.0	302.56	8.0E	101.0	4.0E	359.6	8.0E	491.6	2.0E	866.7
355.0	302.56	8.0E	113.0	4.0E	372.6	8.0E	507.0	2.0E	866.7

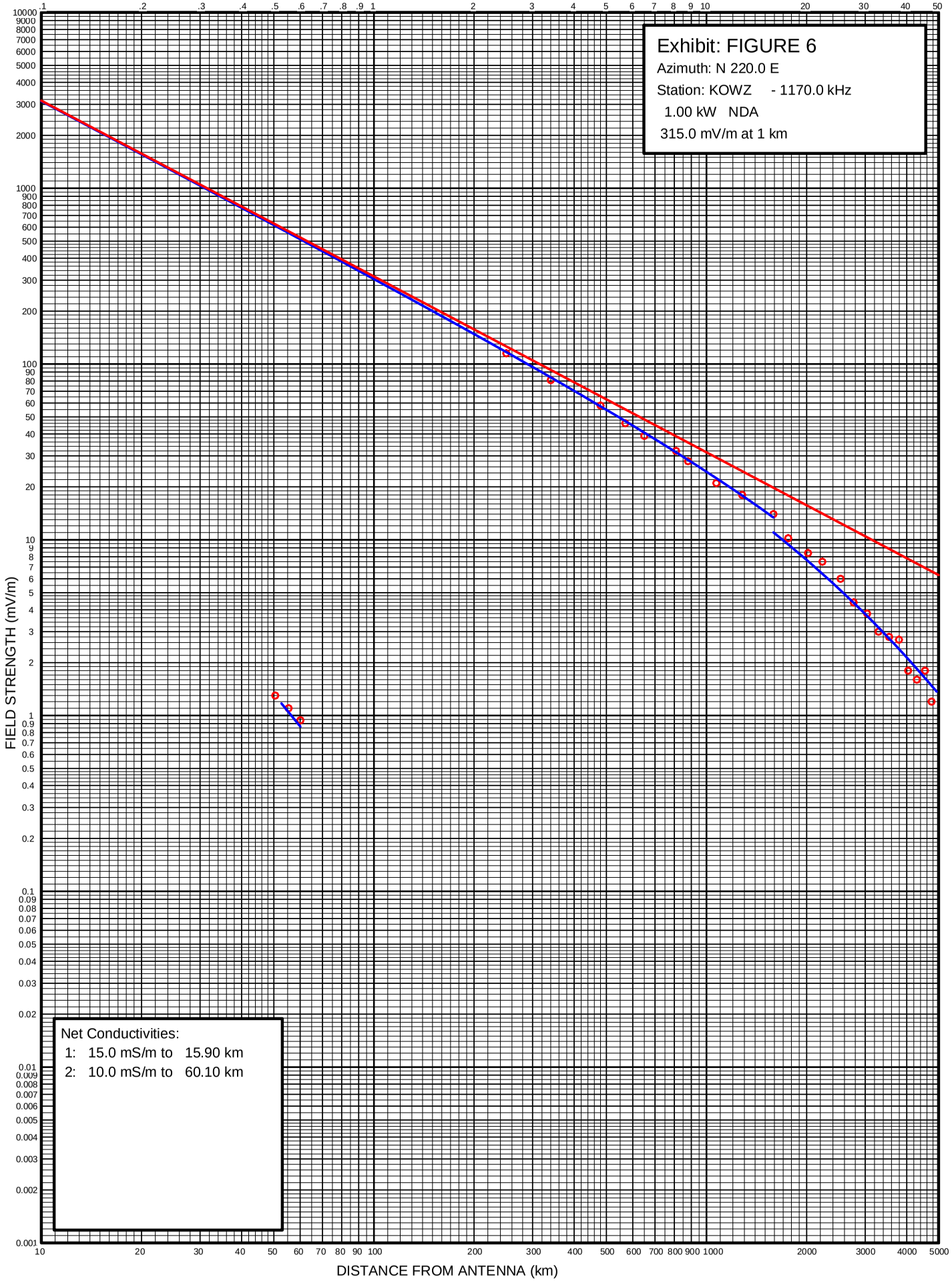


Exhibit: FIGURE 6
Azimuth: N 220.0 E
Station: KOWZ - 1170.0 kHz
1.00 kW NDA
315.0 mV/m at 1 km
Net Conductivities:
1: 15.0 mS/m to 15.90 km
2: 10.0 mS/m to 60.10 km
FIELD STRENGTH (mV/m)
DISTANCE FROM ANTENNA (km)

OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS · EMC TEST LABORATORIES

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

MICHIGAN OFFICE
27451 Everett Street, Southfield, MI 48076
248-557-7274 • Fax 248-557-7275

800-797-1338

FIELD STRENGTH MEASUREMENT DATA

Azimuth: N 220.0

Call: KOWZ
Frequency: 1170.0 kHz
Power: 1.000 kW
Pattern: NDA

Point Number	Date	Time	Distance (km)	Field Strength (mV/m)
1	5/23/03	9:02	2.50	115.00
2		16:15	3.40	81.00
3		9:22	4.80	58.00
4		9:35	5.70	46.00
5		9:40	6.50	39.00
6		9:55	8.10	32.00
7		10:00	8.80	28.00
8		10:12	10.70	21.00
9		10:24	12.80	18.00
10		10:32	15.90	14.00
11		10:48	17.60	10.20
12		10:59	20.20	8.40
13		11:08	22.30	7.50
14		11:14	25.30	6.00
15		11:20	27.70	4.40
16		11:32	30.40	3.80
17		11:40	32.90	3.00
18		11:52	35.40	2.80
19		12:08	37.90	2.70

OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS · EMC TEST LABORATORIES

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

MICHIGAN OFFICE
27451 Everett Street, Southfield, MI 48076
248-557-7274 • Fax 248-557-7275

800-797-1338

FIELD STRENGTH MEASUREMENT DATA

Azimuth: N 220.0

Call: KOWZ
Frequency: 1170.0 kHz
Power: 1.000 kW
Pattern: NDA

Point Number	Date	Time	Distance (km)	Field Strength (mV/m)
20		12:21	40.40	1.80
21		12:33	42.90	1.60
22		12:44	45.40	1.80
23		12:55	47.50	1.20
24		13:08	50.50	1.30
25		13:15	55.40	1.10
26		13:32	60.10	0.940