WZQS

BLED-20040819AAB

Cullowhee, North Carolina

Application for Modified Facilities for Noncommercial FM Station

On Channel 213 Class A

by

Western North Carolina Public Radio, Inc.

Technical Compliance Exhibit

April 2021

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Declaration

I declare, under penalty of perjury, that I am a technical consultant to broadcasting and other communications systems, that I have over twenty-five years of experience in the engineering of broadcast and other communications systems, that I am familiar with the Federal Communications Commission's Rules found in the Code of Federal Regulations Title 47, that I am a Professional Engineer registered in North Carolina, that I have prepared or supervised the preparation of the attached Technical Compliance Exhibit, for Western North Carolina Public Radio, Inc., and that all of the facts therein, except for facts of which the Federal Communications Commission may take official notice, are true to the best of my knowledge and belief.

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23 April 2021

Narrative

This Exhibit provides details of the allocations for the proposed modified facilities of WZQS, Cullowhee, North Carolina. The license file number is BLED-20040819AAB. This proposal complies fully with the requirements of 47 C.F.R. §73.509.

The changes are a new site, reduced elevation, an increase in power, and a new directional pattern.

Allocations

This application proposes service to Cullowhee, North Carolina, on channel 213 as a Class A facility. The Allocations Table in this exhibit provides a list of the stations, construction permits, allocations, and applications studied. All currently licensed facilities are protected from interference from the proposed facilities under 47 C.F.R. §73.509 by this application.

An Allocations Study is included as Figure 1. Where there are facilities whose overlap is less than 3.2 kilometers (2 miles) additional figures are provided, along with the output tables from the computer program FMOVER. Those facilities are identified below.

Figure/Table	Call Sign	Community	Channel and Relationship
2	WGSN	Newport, Tennessee	214C2, first adjacent
3	WSMC-FM	Collegedale, Tennessee	214C, first adjacent

Source of Data

Transmitter location, effective radiated power, directional antenna pattern, and elevation data are extracted from the Commission's LMS. All contours for existing and proposed facilities are calculated using height above average terrain calculated at one degree horizontal increments. All contours for existing and proposed facilities are calculated using height above average terrain calculated at one degree horizontal increments. The contours were evaluated using terrain extracted from the GLOBE 30 arcsecond terrain database, formatted by V-Soft Communications to work with its allocation and mapping programs.

Population data is from 2010 U.S. Census PL data files. Population is counted by considering the location of the centroid of each census block. The data for each block is counted if it falls within the area being counted.

Area and Population

The area within the proposed 60 dBu F(50,50) service contour is calculated by a computer program which sums the areas within the contours based on 360 radials. The area is shown on a Figure at the end of this Exhibit. The population is calculated by the centroid method and is also listed on the Figure.

Table 1: Allocations

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                                        Allocation Study
                                  Western North Carolina Public Radio
REFERENCE            CH# 213A - 90.5 MHz, Pwr= 0.5 kW DA,  HAAT= -23.7 M,  COR= 882.7 M  DISPLAY DATES
35 18 50.2 N.                   Average Protected F(50-50)= 8.5 km                      DATA   04-23-21
83 12 04.1 W.                          Standard Directional                             SEARCH 04-23-21
-------------------------------------------------------------------------------------------------------------
CH     CALL      TYPE  ANT     AZI.  DIST            LAT.        Pwr(kW)  INT(km) PRO(km)   *IN*     *OUT*
CITY                STATE      <--   FILE #          LNG.        HAAT(M)  COR(M)  LICENSEE  (Overlap in km)
-------------------------------------------------------------------------------------------------------------
213A  WZQS!      LIC D       27.8   15.82           35 26 23.30  0.240             ---Reference---
Cullowhee              NC   207.9 BLED20040819AAB   83 07 10.50   289     1432 Western North Carolina Pub

214C2 WGSN       LIC DVN    352.6   66.34           35 54 20.30  1.000   52.2      30.2      0.2       12.7
Newport                TN   172.5 BLED20080926ABP   83 17 47.50   700     1113 New Life Studios, Inc.

213C  WSMC-FM    LIC DCN    268.6  183.88           35 15 20.20  100.000 172.2     77.6      0.2       83.7
Collegedale            TN    87.4 BLED19940222KF    85 13 33.80   314     705  Southern Adventist Univers

211C  WEPR       LIC  CN    119.7   82.97           34 56 29.40  85.000  10.4      74.3     56.1        7.3
Greenville             SC   300.2 BMLED20100628BQG  82 24 37.40   361     669  South Carolina Educational

215C1 WRAF       LIC DCN    190.7   80.85           34 35 57.40  100.000 6.9       56.6     65.5       21.1
Toccoa Falls           GA    10.6 BLED20090529AEI   83 21 54.60   172     513  Radio Training Network, In

213A  WYQS       LIC DCN     42.3   86.33           35 53 12.30  0.250   54.1      15.0     23.8       41.9
Mars Hill              NC   222.7 BLED20080530AHC   82 33 22.40   389     1248 Western North Carolina Pub

213C2 WHQB       LIC DVN    134.4  156.61           34 19 20.40  21.000  113.4     41.1     26.9       69.8
Gray Court             SC   315.1 BLED20160105ABC   81 58 56.60   136     298  The Power Foundation

06+-- WOOT-LP/W«
                 LI  D N    267.0  189.18           35 18 50.56  1.400   3.7        5.4       9.1R    180.1M
Chattanooga, Etc.      TN    85.8 BLTVA-20070713ADV 83 12 04.11           637

-------------------------------------------------------------------------------------------------------------
Terrain database is GLOBE 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=  - Zone 2, Co to 3rd adjacent.
All separation margins (if shown) include rounding. Call signs with exclamation marks need not be protected.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
« = Station meets FCC minimum distance spacing for its class.
```

Table 2: FMOVER protection of WGSN, Newport, Tennessee

04-23-2021 Terrain Data: GLOBE 30 Sec FMOver Analysis

WZQS	WGSN BLED20080926ABP
Channel = 213A	Channel = 214C2
Max ERP = 0.5 kW	Max ERP = 1 kW
RCAMSL = 882.7 m	RCAMSL = 1113 m
N. Lat. 35 18 50.20	N. Lat. 35 54 20.30
W. Lng. 83 12 04.10	W. Lng. 83 17 47.50
Protected	Interfering
60 dBu	54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
293.0	000.1800	0016.3	006.5	177.6	000.2458	0601.3	063.3	49.36	
294.0	000.1800	0028.2	006.5	177.6	000.2454	0601.3	063.2	49.39	
295.0	000.1800	0038.4	007.3	178.2	000.2514	0601.5	062.7	49.65	
296.0	000.1800	0048.4	008.3	178.9	000.2593	0601.8	062.1	49.98	
297.0	000.1800	0059.1	009.3	179.7	000.2668	0601.8	061.6	50.31	
298.0	000.1800	0069.0	010.0	180.2	000.2721	0600.5	061.1	50.54	
299.0	000.1800	0077.2	010.5	180.5	000.2761	0599.6	060.7	50.73	
300.0	000.1800	0081.2	010.8	180.6	000.2775	0599.3	060.4	50.85	
301.0	000.1740	0083.1	010.8	180.6	000.2768	0599.4	060.2	50.90	
302.0	000.1682	0086.5	010.9	180.6	000.2768	0599.4	060.0	50.98	
303.0	000.1624	0097.0	011.4	180.9	000.2803	0598.6	059.6	51.17	
304.0	000.1568	0114.1	012.2	181.5	000.2865	0597.2	059.0	51.46	
305.0	000.1513	0133.3	013.1	182.0	000.2928	0595.8	058.3	51.76	
306.0	000.1458	0150.5	013.8	182.5	000.2986	0594.5	057.7	52.04	
307.0	000.1404	0163.0	014.3	182.8	000.3017	0593.4	057.2	52.24	
308.0	000.1352	0174.2	014.7	183.0	000.3036	0592.3	056.8	52.41	
309.0	000.1300	0185.7	015.0	183.1	000.3048	0591.6	056.4	52.55	
310.0	000.1250	0198.5	015.3	183.2	000.3062	0590.9	056.0	52.71	
311.0	000.1265	0211.0	015.9	183.4	000.3094	0589.2	055.5	52.93	
312.0	000.1280	0221.1	016.3	183.6	000.3117	0587.9	055.0	53.12	
313.0	000.1295	0227.8	016.7	183.7	000.3125	0587.4	054.5	53.28	
314.0	000.1311	0231.3	016.8	183.7	000.3120	0587.7	054.2	53.40	
315.0	000.1326	0233.2	017.0	183.6	000.3109	0588.4	053.9	53.50	
316.0	000.1342	0235.5	017.1	183.5	000.3097	0589.0	053.6	53.61	
317.0	000.1357	0238.2	017.3	183.4	000.3086	0589.6	053.3	53.72	
318.0	000.1373	0240.2	017.4	183.3	000.3071	0590.4	052.9	53.82	
319.0	000.1389	0239.9	017.4	183.0	000.3047	0591.7	052.7	53.89	
320.0	000.1404	0236.1	017.4	182.7	000.3011	0593.6	052.6	53.91	
321.0	000.1474	0229.1	017.3	182.5	000.2979	0594.6	052.4	53.94	
322.0	000.1551	0220.1	017.2	182.1	000.2940	0595.5	052.3	53.93	
323.0	000.1630	0210.1	017.0	181.7	000.2896	0596.5	052.3	53.90	
324.0	000.1705	0199.4	016.7	181.3	000.2849	0597.6	052.3	53.83	
325.0	000.1782	0188.7	016.5	180.9	000.2801	0598.7	052.3	53.76	
326.0	000.1867	0177.8	016.2	180.4	000.2753	0599.8	052.4	53.68	
327.0	000.1953	0166.3	015.8	180.0	000.2699	0601.1	052.5	53.55	
328.0	000.2035	0153.4	015.2	179.4	000.2639	0601.9	052.9	53.34	
329.0	000.2119	0139.3	014.6	178.8	000.2576	0601.7	053.3	53.07	
330.0	000.2211	0126.1	014.0	178.2	000.2521	0601.5	053.7	52.83	
331.0	000.2326	0116.2	013.6	177.8	000.2480	0601.4	053.9	52.68	
332.0	000.2443	0109.6	013.4	177.5	000.2447	0601.3	054.0	52.59	
333.0	000.2563	0101.8	013.1	177.1	000.2411	0601.1	054.2	52.45	

334.0	000.2686	0089.5	012.4	176.6	000.2363	0600.2	054.7	52.17
335.0	000.2813	0075.2	011.6	176.1	000.2311	0599.4	055.4	51.81
336.0	000.2941	0063.4	010.8	175.7	000.2268	0599.4	056.0	51.51
337.0	000.3073	0052.8	010.1	175.2	000.2226	0599.1	056.7	51.18
338.0	000.3208	0040.7	008.8	174.7	000.2176	0598.5	057.9	50.67
339.0	000.3346	0027.4	007.6	174.2	000.2133	0598.0	059.0	50.19
340.0	000.3486	0017.7	007.7	174.1	000.2123	0597.9	058.8	50.21
341.0	000.3621	0012.1	007.8	174.0	000.2113	0597.8	058.7	50.23
342.0	000.3767	0005.7	007.9	173.9	000.2103	0597.7	058.6	50.24
343.0	000.3907	-0004.0	007.9	173.8	000.2092	0597.6	058.5	50.26
344.0	000.4059	-0015.3	008.0	173.7	000.2081	0597.5	058.4	50.27
345.0	000.4214	-0022.1	008.1	173.6	000.2069	0597.3	058.3	50.28
346.0	000.4362	-0022.1	008.2	173.4	000.2058	0597.1	058.2	50.29
347.0	000.4522	-0020.2	008.3	173.3	000.2046	0596.8	058.1	50.29
348.0	000.4675	-0027.0	008.3	173.2	000.2033	0596.5	058.0	50.29
349.0	000.4841	-0042.1	008.4	173.0	000.2021	0596.2	057.9	50.29
350.0	000.5000	-0057.3	008.5	172.9	000.2008	0595.8	057.9	50.29
351.0	000.5000	-0062.6	008.5	172.7	000.1995	0595.4	057.8	50.26
352.0	000.5000	-0059.1	008.5	172.6	000.1981	0595.1	057.8	50.23
353.0	000.5000	-0056.6	008.5	172.4	000.1968	0594.8	057.8	50.20
354.0	000.5000	-0059.1	008.5	172.3	000.1955	0594.5	057.8	50.16
355.0	000.5000	-0063.2	008.5	172.1	000.1942	0594.2	057.9	50.13
356.0	000.5000	-0060.2	008.5	172.0	000.1929	0594.0	057.9	50.09
357.0	000.5000	-0050.8	008.5	171.9	000.1916	0593.8	057.9	50.06
358.0	000.5000	-0041.2	008.5	171.7	000.1903	0593.6	057.9	50.02
359.0	000.5000	-0035.0	008.5	171.6	000.1890	0593.5	057.9	49.98
000.0	000.5000	-0043.5	008.5	171.4	000.1878	0593.4	057.9	49.94
001.0	000.5000	-0052.0	008.5	171.3	000.1865	0593.4	058.0	49.91
002.0	000.5000	-0059.2	008.5	171.1	000.1852	0593.4	058.0	49.87
003.0	000.5000	-0050.8	008.5	171.0	000.1840	0593.6	058.0	49.83
004.0	000.5000	-0043.0	008.5	170.8	000.1827	0593.8	058.0	49.79
005.0	000.5000	-0036.2	008.5	170.7	000.1815	0594.0	058.1	49.75
006.0	000.5000	-0036.1	008.5	170.6	000.1803	0594.3	058.1	49.71
007.0	000.5000	-0050.1	008.5	170.4	000.1791	0594.6	058.2	49.68
008.0	000.5000	-0067.1	008.5	170.3	000.1779	0595.0	058.2	49.64
009.0	000.5000	-0084.8	008.5	170.1	000.1767	0595.3	058.2	49.59
010.0	000.5000	-0094.7	008.5	170.0	000.1756	0595.7	058.3	49.55
011.0	000.5000	-0092.0	008.5	169.9	000.1751	0596.1	058.3	49.53
012.0	000.5000	-0082.3	008.5	169.7	000.1746	0596.5	058.4	49.50
013.0	000.5000	-0068.6	008.5	169.6	000.1741	0596.8	058.5	49.47
014.0	000.5000	-0055.4	008.5	169.5	000.1736	0597.1	058.5	49.44
015.0	000.5000	-0047.5	008.5	169.3	000.1731	0597.4	058.6	49.41
016.0	000.5000	-0047.3	008.5	169.2	000.1726	0597.6	058.6	49.38
017.0	000.5000	-0052.5	008.5	169.1	000.1722	0597.7	058.7	49.34
018.0	000.5000	-0057.4	008.5	168.9	000.1717	0597.8	058.8	49.31
019.0	000.5000	-0061.7	008.5	168.8	000.1712	0597.7	058.9	49.27
020.0	000.5000	-0061.7	008.5	168.7	000.1708	0597.6	058.9	49.23
021.0	000.5000	-0062.0	008.5	168.6	000.1703	0597.5	059.0	49.19
022.0	000.5000	-0061.1	008.5	168.5	000.1699	0597.3	059.1	49.15
023.0	000.5000	-0059.1	008.5	168.3	000.1695	0597.0	059.2	49.11
024.0	000.5000	-0053.3	008.5	168.2	000.1690	0596.8	059.3	49.06
025.0	000.5000	-0045.2	008.5	168.1	000.1686	0596.6	059.3	49.02
026.0	000.5000	-0038.1	008.5	168.0	000.1682	0596.4	059.4	48.97
027.0	000.5000	-0035.3	008.5	167.9	000.1678	0596.2	059.5	48.93
028.0	000.5000	-0039.6	008.5	167.8	000.1674	0596.1	059.6	48.88
029.0	000.5000	-0044.5	008.5	167.7	000.1670	0596.1	059.7	48.84
030.0	000.5000	-0044.9	008.5	167.5	000.1666	0596.0	059.8	48.80
031.0	000.5000	-0038.8	008.5	167.4	000.1663	0596.1	059.9	48.75
032.0	000.5000	-0031.3	008.5	167.3	000.1659	0596.1	060.0	48.71
033.0	000.5000	-0023.5	008.5	167.2	000.1655	0596.2	060.1	48.66
034.0	000.5000	-0013.2	008.5	167.1	000.1652	0596.3	060.2	48.62
035.0	000.5000	-0002.7	008.5	167.0	000.1649	0596.5	060.3	48.57
036.0	000.5000	0004.9	008.5	167.0	000.1645	0596.6	060.5	48.53

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037.0  000.5000  0006.5  008.5 | 166.9  000.1642  0596.8  060.6  48.48
038.0  000.5000  0002.0  008.5 | 166.8  000.1639  0596.9  060.7  48.43
039.0  000.5000 -0007.2  008.5 | 166.7  000.1636  0597.1  060.8  48.39
040.0  000.5000 -0019.0  008.5 | 166.6  000.1633  0597.3  060.9  48.34
041.0  000.5000 -0033.1  008.5 | 166.5  000.1630  0597.4  061.0  48.29
042.0  000.5000 -0048.0  008.5 | 166.4  000.1627  0597.6  061.2  48.25
043.0  000.5000 -0062.8  008.5 | 166.4  000.1624  0597.8  061.3  48.20
044.0  000.5000 -0077.8  008.5 | 166.3  000.1621  0597.9  061.4  48.15
045.0  000.5000 -0093.9  008.5 | 166.2  000.1619  0598.1  061.5  48.10
046.0  000.5000 -0110.6  008.5 | 166.1  000.1616  0598.3  061.7  48.06
047.0  000.5000 -0128.2  008.5 | 166.1  000.1614  0598.5  061.8  48.01
048.0  000.5000 -0147.9  008.5 | 166.0  000.1612  0598.7  061.9  47.96
049.0  000.5000 -0168.4  008.5 | 165.9  000.1609  0599.0  062.1  47.91
050.0  000.5000 -0186.5  008.5 | 165.9  000.1607  0599.2  062.2  47.86
051.0  000.5000 -0198.8  008.5 | 165.8  000.1605  0599.4  062.3  47.81
052.0  000.5000 -0206.4  008.5 | 165.8  000.1603  0599.6  062.5  47.77
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04-23-2021 Terrain Data: GLOBE 30 Sec FMOver Analysis

WGSN BLED20080926ABP	WZQS
Channel = 214C2	Channel = 213A
Max ERP = 1 kW	Max ERP = 0.5 kW
RCAMSL = 1113 m	RCAMSL = 882.7 m
N. Lat. 35 54 20.30	N. Lat. 35 18 50.20
W. Lng. 83 17 47.50	W. Lng. 83 12 04.10
Protected	Interfering
60 dBu	54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
113.0	000.0625	0606.1	023.2	012.6	000.5000	-0073.6	058.1	31.18	
114.0	000.0625	0608.0	023.2	012.6	000.5000	-0074.2	057.7	31.27	
115.0	000.0625	0610.8	023.2	012.6	000.5000	-0074.6	057.3	31.35	
116.0	000.0625	0616.1	023.3	012.6	000.5000	-0074.5	056.9	31.44	
117.0	000.0625	0625.2	023.5	012.6	000.5000	-0073.5	056.5	31.54	
118.0	000.0625	0637.0	023.7	012.8	000.5000	-0072.0	056.0	31.63	
119.0	000.0625	0646.7	023.9	012.8	000.5000	-0071.1	055.6	31.73	
120.0	000.0625	0653.5	024.0	012.8	000.5000	-0071.2	055.1	31.82	
121.0	000.0625	0655.7	024.1	012.7	000.5000	-0072.4	054.7	31.91	
122.0	000.0625	0655.8	024.1	012.6	000.5000	-0074.4	054.3	32.00	
123.0	000.0625	0656.8	024.1	012.4	000.5000	-0076.3	053.9	32.08	
124.0	000.0625	0660.9	024.2	012.4	000.5000	-0077.5	053.5	32.17	
125.0	000.0625	0667.2	024.3	012.3	000.5000	-0078.3	053.1	32.27	
126.0	000.0625	0673.1	024.4	012.2	000.5000	-0079.4	052.6	32.36	
127.0	000.0625	0674.9	024.4	012.1	000.5000	-0081.5	052.2	32.45	
128.0	000.0625	0673.6	024.4	011.8	000.5000	-0084.3	051.8	32.53	
129.0	000.0625	0673.3	024.4	011.6	000.5000	-0086.8	051.5	32.61	
130.0	000.0625	0675.9	024.4	011.4	000.5000	-0088.6	051.1	32.70	
131.0	000.0638	0677.8	024.6	011.3	000.5000	-0089.4	050.6	32.80	
132.0	000.0650	0676.0	024.7	011.2	000.5000	-0090.7	050.2	32.89	
133.0	000.0663	0670.9	024.7	011.0	000.5000	-0092.2	049.8	32.97	
134.0	000.0676	0665.7	024.7	010.7	000.5000	-0093.5	049.5	33.05	
135.0	000.0689	0661.9	024.8	010.5	000.5000	-0094.4	049.1	33.13	
136.0	000.0702	0657.6	024.8	010.2	000.5000	-0094.9	048.7	33.21	
137.0	000.0716	0651.8	024.8	009.9	000.5000	-0094.3	048.3	33.29	
138.0	000.0729	0644.2	024.8	009.6	000.5000	-0091.7	048.0	33.36	
139.0	000.0743	0636.8	024.7	009.2	000.5000	-0087.6	047.7	33.43	
140.0	000.0756	0630.9	024.7	008.9	000.5000	-0082.5	047.4	33.50	
141.0	000.0784	0625.8	024.9	008.6	000.5000	-0078.3	047.0	33.59	
142.0	000.0812	0621.0	025.0	008.3	000.5000	-0073.5	046.6	33.69	
143.0	000.0841	0617.6	025.1	008.1	000.5000	-0068.8	046.2	33.78	
144.0	000.0870	0616.7	025.3	007.9	000.5000	-0064.5	045.7	33.89	
145.0	000.0900	0619.0	025.5	007.7	000.5000	-0060.9	045.3	34.02	
146.0	000.0930	0623.0	025.8	007.5	000.5000	-0057.6	044.7	34.15	
147.0	000.0961	0627.1	026.1	007.3	000.5000	-0054.3	044.2	34.28	
148.0	000.0992	0629.8	026.4	007.0	000.5000	-0050.5	043.8	34.41	
149.0	000.1024	0631.0	026.6	006.7	000.5000	-0046.0	043.3	34.54	
150.0	000.1056	0631.7	026.8	006.4	000.5000	-0041.1	042.8	34.67	
151.0	000.1089	0633.1	027.0	006.1	000.5000	-0036.8	042.4	34.80	
152.0	000.1122	0634.3	027.2	005.7	000.5000	-0034.1	041.9	34.93	
153.0	000.1156	0634.6	027.4	005.3	000.5000	-0034.3	041.5	35.06	
154.0	000.1190	0634.4	027.6	004.9	000.5000	-0037.1	041.1	35.18	
155.0	000.1225	0634.5	027.8	004.4	000.5000	-0040.0	040.7	35.30	
156.0	000.1260	0635.4	028.0	004.0	000.5000	-0043.3	040.3	35.43	

157.0	000.1296	0635.1	028.2	003.5	000.5000	-0047.1	039.9	35.55
158.0	000.1332	0632.7	028.3	002.9	000.5000	-0051.7	039.6	35.66
159.0	000.1369	0628.3	028.4	002.3	000.5000	-0058.0	039.3	35.75
160.0	000.1406	0622.7	028.5	001.6	000.5000	-0057.4	039.0	35.83
161.0	000.1439	0615.7	028.5	001.0	000.5000	-0051.7	038.9	35.89
162.0	000.1473	0609.8	028.5	000.3	000.5000	-0045.9	038.7	35.94
163.0	000.1507	0606.2	028.6	359.6	000.5000	-0040.1	038.5	36.02
164.0	000.1541	0604.9	028.7	358.9	000.5000	-0034.5	038.2	36.10
165.0	000.1576	0602.9	028.8	358.2	000.5000	-0038.8	038.0	36.18
166.0	000.1611	0598.8	028.9	357.5	000.5000	-0045.9	037.8	36.23
167.0	000.1647	0596.6	028.9	356.8	000.5000	-0052.7	037.6	36.30
168.0	000.1683	0596.4	029.1	356.1	000.5000	-0059.7	037.4	36.37
169.0	000.1719	0597.7	029.3	355.3	000.5000	-0062.8	037.2	36.46
170.0	000.1756	0595.7	029.4	354.5	000.5000	-0061.4	037.0	36.51
171.0	000.1841	0593.5	029.7	353.8	000.5000	-0058.5	036.7	36.62
172.0	000.1929	0594.0	030.0	353.0	000.5000	-0056.7	036.3	36.75
173.0	000.2019	0596.1	030.4	352.1	000.5000	-0058.6	035.9	36.89
174.0	000.2110	0597.8	030.8	351.3	000.5000	-0062.0	035.6	37.02
175.0	000.2204	0598.8	031.2	350.4	000.5000	-0060.9	035.2	37.14
176.0	000.2300	0599.4	031.5	349.4	000.4905	-0048.6	034.9	37.17
177.0	000.2398	0601.1	031.9	348.4	000.4744	-0032.9	034.6	37.14
178.0	000.2498	0601.4	032.3	347.4	000.4582	-0021.6	034.3	37.09
179.0	000.2600	0601.8	032.6	346.3	000.4417	-0021.0	034.1	37.01
180.0	000.2704	0600.9	033.0	345.3	000.4255	-0022.9	033.9	36.91
181.0	000.2814	0598.4	033.2	344.2	000.4093	-0017.2	033.8	36.78
182.0	000.2927	0595.8	033.5	343.1	000.3930	-0005.8	033.8	36.63
183.0	000.3042	0592.0	033.7	342.1	000.3779	0005.1	033.8	36.46
184.0	000.3158	0585.4	033.8	341.1	000.3634	0011.5	033.9	36.25
185.0	000.3278	0578.0	033.9	340.1	000.3503	0016.9	034.1	36.03
186.0	000.3399	0571.9	034.0	339.1	000.3366	0025.7	034.2	35.80
187.0	000.3522	0569.9	034.3	338.1	000.3218	0039.6	034.3	37.61
188.0	000.3648	0569.8	034.5	337.0	000.3068	0053.3	034.3	39.86
189.0	000.3776	0569.1	034.8	335.9	000.2924	0064.9	034.4	41.17
190.0	000.3906	0568.3	035.1	334.8	000.2785	0078.2	034.5	42.45
191.0	000.3987	0567.3	035.2	333.8	000.2665	0092.1	034.8	43.59
192.0	000.4068	0565.6	035.3	332.9	000.2553	0102.6	035.1	44.23
193.0	000.4150	0564.8	035.5	332.0	000.2443	0109.6	035.4	44.48
194.0	000.4233	0563.7	035.6	331.1	000.2339	0115.3	035.7	44.56
195.0	000.4316	0563.1	035.8	330.2	000.2237	0123.3	036.0	44.74
196.0	000.4401	0562.2	035.9	329.4	000.2154	0134.0	036.4	45.06
197.0	000.4486	0562.7	036.1	328.5	000.2078	0146.5	036.7	45.46
198.0	000.4572	0564.2	036.3	327.6	000.2003	0158.5	037.0	45.81
199.0	000.4659	0568.7	036.6	326.6	000.1920	0170.8	037.3	46.11
200.0	000.4747	0575.1	037.0	325.6	000.1829	0182.4	037.6	46.31
201.0	000.4901	0582.8	037.5	324.3	000.1730	0196.0	037.9	46.58
202.0	000.5058	0590.4	038.1	323.1	000.1639	0208.9	038.1	46.81
203.0	000.5217	0597.0	038.6	322.0	000.1549	0220.4	038.5	46.93
204.0	000.5379	0603.3	039.0	320.9	000.1466	0230.1	038.8	46.92
205.0	000.5543	0609.5	039.5	319.8	000.1402	0237.0	039.3	46.81
206.0	000.5709	0615.6	040.0	318.8	000.1385	0240.1	039.7	46.67
207.0	000.5878	0621.7	040.5	317.8	000.1370	0239.9	040.2	46.40
208.0	000.6050	0626.6	040.9	316.9	000.1356	0238.0	040.7	46.04
209.0	000.6224	0628.2	041.2	316.2	000.1344	0235.9	041.3	45.66
210.0	000.6400	0627.8	041.4	315.6	000.1335	0234.5	041.9	45.30
211.0	000.6652	0627.6	041.8	314.9	000.1324	0232.9	042.5	44.93
212.0	000.6909	0630.1	042.2	314.1	000.1312	0231.4	043.1	44.55
213.0	000.7171	0634.4	042.7	313.3	000.1299	0228.9	043.8	44.13
214.0	000.7437	0639.0	043.2	312.5	000.1287	0224.7	044.4	43.62
215.0	000.7709	0642.0	043.6	311.8	000.1277	0219.1	045.1	43.04
216.0	000.7985	0643.9	044.0	311.2	000.1268	0213.0	045.8	42.43
217.0	000.8266	0644.6	044.4	310.7	000.1260	0207.1	046.6	41.82
218.0	000.8553	0644.7	044.7	310.2	000.1253	0201.6	047.4	41.22
219.0	000.8844	0645.0	045.0	309.8	000.1259	0196.1	048.1	40.68

220.0	000.9139	0646.5	045.4	309.4	000.1281	0190.4	048.9	40.18
221.0	000.9224	0651.3	045.7	309.1	000.1295	0187.0	049.7	39.76
222.0	000.9308	0657.9	046.0	308.8	000.1312	0183.1	050.5	39.32
223.0	000.9393	0662.5	046.2	308.6	000.1323	0180.6	051.3	38.92
224.0	000.9479	0661.3	046.3	308.6	000.1321	0180.9	052.2	38.62
225.0	000.9565	0655.9	046.2	308.8	000.1311	0183.2	052.9	38.39
226.0	000.9651	0651.6	046.1	309.0	000.1302	0185.2	053.7	38.14
227.0	000.9738	0652.0	046.2	309.0	000.1302	0185.3	054.6	37.83
228.0	000.9825	0656.7	046.5	308.8	000.1309	0183.8	055.4	37.47
229.0	000.9912	0662.3	046.7	308.7	000.1316	0182.1	056.2	37.10
230.0	001.0000	0665.8	046.9	308.6	000.1319	0181.5	057.1	36.76
231.0	001.0000	0666.0	047.0	308.8	000.1310	0183.4	057.9	36.51
232.0	001.0000	0663.8	046.9	309.1	000.1298	0186.3	058.7	36.31

Table 3: FMOVER Protection of WSMC-FM, Collegedale, Tennessee

04-23-2021 Terrain Data: GLOBE 30 Sec FMOver Analysis

WZQS	WSMC-FM BLED19940222KF
Channel = 213A	Channel = 213C
Max ERP = 0.5 kW	Max ERP = 100 kW
RCAMSL = 882.7 m	RCAMSL = 705 m
N. Lat. 35 18 50.20	N. Lat. 35 15 20.20
W. Lng. 83 12 04.10	W. Lng. 85 13 33.80
Protected	Interfering
60 dBu	40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
179.0	000.5000	-0160.8	008.5	090.0	061.5270	0448.8	184.0	38.40	
180.0	000.5000	-0170.3	008.5	090.0	061.5290	0448.8	183.9	38.43	
181.0	000.5000	-0179.8	008.5	090.0	061.5298	0448.8	183.7	38.45	
182.0	000.5000	-0194.8	008.5	090.0	061.5295	0448.8	183.6	38.48	
183.0	000.5000	-0209.2	008.5	090.0	061.5280	0448.8	183.4	38.51	
184.0	000.5000	-0224.4	008.5	090.0	061.5253	0448.8	183.3	38.53	
185.0	000.5000	-0238.4	008.5	090.0	061.5215	0448.8	183.1	38.56	
186.0	000.5000	-0238.4	008.5	090.0	061.5165	0448.8	183.0	38.59	
187.0	000.5000	-0227.1	008.5	090.0	061.5103	0448.8	182.8	38.61	
188.0	000.5000	-0207.8	008.5	090.0	061.5029	0448.8	182.7	38.64	
189.0	000.5000	-0190.4	008.5	090.0	061.4944	0448.8	182.5	38.67	
190.0	000.5000	-0179.9	008.5	090.0	061.4846	0448.8	182.4	38.69	
191.0	000.5000	-0174.1	008.5	090.0	061.4737	0448.8	182.2	38.72	
192.0	000.5000	-0166.3	008.5	090.0	061.4609	0448.8	182.1	38.74	
193.0	000.5000	-0160.1	008.5	090.0	061.4450	0448.8	181.9	38.77	
194.0	000.5000	-0156.0	008.5	090.0	061.4278	0448.8	181.8	38.80	
195.0	000.5000	-0150.6	008.5	090.0	061.4092	0448.8	181.7	38.82	
196.0	000.5000	-0145.2	008.5	090.0	061.3891	0448.8	181.5	38.85	
197.0	000.5000	-0141.3	008.5	089.9	061.3677	0448.8	181.4	38.87	
198.0	000.5000	-0140.8	008.5	089.9	061.3449	0448.8	181.2	38.90	
199.0	000.5000	-0142.8	008.5	089.9	061.3207	0448.8	181.1	38.92	
200.0	000.5000	-0143.4	008.5	089.9	061.2951	0448.8	180.9	38.95	
201.0	000.5000	-0141.3	008.5	089.9	061.2682	0448.8	180.8	38.97	
202.0	000.5000	-0139.7	008.5	089.9	061.2399	0448.8	180.7	39.00	
203.0	000.5000	-0142.4	008.5	089.9	061.2102	0448.8	180.5	39.02	
204.0	000.5000	-0148.3	008.5	089.8	061.1792	0448.8	180.4	39.05	
205.0	000.5000	-0156.8	008.5	089.8	061.1468	0448.8	180.3	39.07	
206.0	000.5000	-0166.1	008.5	089.8	061.1132	0448.8	180.1	39.10	
207.0	000.5000	-0174.9	008.5	089.8	061.0781	0448.8	180.0	39.12	
208.0	000.5000	-0180.0	008.5	089.8	061.0418	0448.8	179.9	39.14	
209.0	000.5000	-0182.1	008.5	089.7	061.0042	0448.8	179.7	39.17	
210.0	000.5000	-0182.6	008.5	089.7	060.9652	0448.8	179.6	39.19	
211.0	000.4920	-0180.0	008.5	089.7	060.9077	0448.8	179.5	39.21	
212.0	000.4841	-0172.4	008.4	089.6	060.8492	0448.8	179.4	39.22	
213.0	000.4763	-0164.2	008.4	089.6	060.7897	0448.8	179.3	39.24	
214.0	000.4685	-0157.6	008.4	089.6	060.7292	0448.8	179.2	39.26	
215.0	000.4608	-0149.6	008.3	089.5	060.6677	0448.8	179.1	39.27	
216.0	000.4532	-0137.0	008.3	089.5	060.6053	0448.8	179.0	39.29	
217.0	000.4456	-0120.9	008.2	089.5	060.5420	0448.9	178.9	39.30	
218.0	000.4380	-0104.1	008.2	089.4	060.4779	0448.9	178.8	39.32	
219.0	000.4306	-0088.5	008.2	089.4	060.4129	0448.9	178.7	39.33	

220.0	000.4232	-0075.2	008.1	089.3	060.3472	0448.9	178.6	39.34
221.0	000.4077	-0064.8	008.0	089.3	060.2620	0448.9	178.6	39.35
222.0	000.3925	-0057.6	008.0	089.2	060.1781	0448.9	178.5	39.35
223.0	000.3776	-0053.4	007.9	089.2	060.0952	0448.9	178.5	39.36
224.0	000.3630	-0050.1	007.8	089.2	060.0118	0448.9	178.4	39.36
225.0	000.3486	-0044.4	007.7	089.1	059.9279	0448.9	178.4	39.36
226.0	000.3346	-0034.8	007.6	089.1	059.8436	0448.9	178.3	39.36
227.0	000.3208	-0023.0	007.5	089.0	059.7589	0448.9	178.3	39.36
228.0	000.3073	-0010.4	007.5	089.0	059.6755	0448.9	178.3	39.36
229.0	000.2941	0002.1	007.4	088.9	059.5937	0448.9	178.3	39.36
230.0	000.2813	0012.4	007.3	088.9	059.5117	0449.0	178.2	39.36
231.0	000.2701	0018.7	007.2	088.8	059.4329	0449.0	178.2	39.36
232.0	000.2592	0020.8	007.2	088.8	059.3539	0449.0	178.2	39.36
233.0	000.2485	0020.6	007.1	088.7	059.2749	0449.0	178.2	39.36
234.0	000.2380	0020.0	007.0	088.7	059.1958	0449.0	178.2	39.35
235.0	000.2278	0020.2	006.9	088.6	059.1184	0449.0	178.2	39.35
236.0	000.2178	0019.4	006.9	088.6	059.0411	0449.0	178.1	39.35
237.0	000.2080	0015.8	006.8	088.5	058.9639	0449.0	178.1	39.34
238.0	000.1984	0008.5	006.7	088.5	058.8868	0449.0	178.2	39.33
239.0	000.1891	-0000.5	006.6	088.4	058.8100	0449.0	178.2	39.33
240.0	000.1800	-0007.9	006.5	088.4	058.7334	0449.0	178.2	39.32
241.0	000.1758	-0007.6	006.5	088.4	058.6694	0449.0	178.2	39.32
242.0	000.1717	0001.1	006.5	088.3	058.6059	0449.0	178.1	39.32
243.0	000.1676	0015.3	006.4	088.3	058.5424	0449.0	178.1	39.32
244.0	000.1636	0028.5	006.4	088.2	058.4790	0449.0	178.1	39.31
245.0	000.1596	0039.5	007.2	088.3	058.6102	0449.0	177.3	39.49
246.0	000.1557	0048.9	008.0	088.4	058.7315	0449.0	176.5	39.68
247.0	000.1518	0056.0	008.6	088.4	058.7868	0449.0	175.9	39.81
248.0	000.1480	0061.4	009.0	088.4	058.7807	0449.0	175.5	39.90
249.0	000.1442	0062.0	009.0	088.4	058.6964	0449.0	175.4	39.90
250.0	000.1404	0053.6	008.3	088.2	058.4835	0449.0	176.1	39.75
251.0	000.1442	0037.4	006.8	088.1	058.1652	0449.1	177.4	39.44
252.0	000.1480	0016.5	006.2	088.0	058.0057	0449.1	177.9	39.32
253.0	000.1518	-0003.6	006.3	087.9	057.9556	0449.1	177.9	39.33
254.0	000.1557	-0016.0	006.3	087.9	057.9044	0449.1	177.8	39.34
255.0	000.1596	-0018.1	006.3	087.9	057.8522	0449.1	177.7	39.35
256.0	000.1636	-0015.8	006.4	087.8	057.7989	0449.1	177.7	39.36
257.0	000.1676	-0013.5	006.4	087.8	057.7446	0449.1	177.6	39.36
258.0	000.1717	-0014.5	006.5	087.8	057.6893	0449.1	177.5	39.37
259.0	000.1758	-0018.1	006.5	087.7	057.6330	0449.1	177.5	39.38
260.0	000.1800	-0021.4	006.5	087.7	057.5760	0449.1	177.4	39.39
261.0	000.1800	-0023.3	006.5	087.7	057.5153	0449.1	177.4	39.39
262.0	000.1800	-0022.5	006.5	087.6	057.4544	0449.1	177.4	39.39
263.0	000.1800	-0018.8	006.5	087.6	057.3934	0449.1	177.4	39.38
264.0	000.1800	-0015.9	006.5	087.6	057.3324	0449.1	177.4	39.38
265.0	000.1800	-0018.6	006.5	087.5	057.2712	0449.1	177.4	39.38
266.0	000.1800	-0030.1	006.5	087.5	057.2101	0449.2	177.4	39.38
267.0	000.1800	-0040.6	006.5	087.5	057.1489	0449.2	177.4	39.37
268.0	000.1800	-0050.9	006.5	087.4	057.0877	0449.2	177.4	39.37
269.0	000.1800	-0061.4	006.5	087.4	057.0265	0449.2	177.4	39.36
270.0	000.1800	-0070.5	006.5	087.3	056.9654	0449.2	177.4	39.36
271.0	000.1800	-0080.8	006.5	087.3	056.9043	0449.2	177.4	39.35
272.0	000.1800	-0091.0	006.5	087.3	056.8433	0449.2	177.4	39.35
273.0	000.1800	-0099.8	006.5	087.2	056.7825	0449.2	177.4	39.34
274.0	000.1800	-0096.3	006.5	087.2	056.7217	0449.2	177.4	39.33
275.0	000.1800	-0091.8	006.5	087.2	056.6611	0449.2	177.4	39.33
276.0	000.1800	-0091.6	006.5	087.1	056.6007	0449.2	177.4	39.32
277.0	000.1800	-0095.3	006.5	087.1	056.5404	0449.2	177.4	39.31
278.0	000.1800	-0099.6	006.5	087.0	056.4803	0449.2	177.4	39.30
279.0	000.1800	-0100.9	006.5	087.0	056.4205	0449.2	177.5	39.29
280.0	000.1800	-0105.5	006.5	087.0	056.3609	0449.2	177.5	39.29
281.0	000.1800	-0112.1	006.5	086.9	056.3016	0449.2	177.5	39.28
282.0	000.1800	-0119.1	006.5	086.9	056.2426	0449.2	177.5	39.27

283.0	000.1800	-0124.5	006.5	086.9	056.1838	0449.2	177.6	39.25
284.0	000.1800	-0122.2	006.5	086.8	056.1254	0449.2	177.6	39.24
285.0	000.1800	-0114.6	006.5	086.8	056.0674	0449.2	177.6	39.23
286.0	000.1800	-0104.4	006.5	086.8	056.0097	0449.2	177.7	39.22
287.0	000.1800	-0091.9	006.5	086.7	055.9523	0449.2	177.7	39.21
288.0	000.1800	-0075.1	006.5	086.7	055.8954	0449.3	177.7	39.20
289.0	000.1800	-0056.1	006.5	086.7	055.8389	0449.3	177.8	39.18
290.0	000.1800	-0035.5	006.5	086.6	055.7828	0449.3	177.8	39.17
291.0	000.1800	-0015.5	006.5	086.6	055.7272	0449.3	177.9	39.16
292.0	000.1800	0001.5	006.5	086.6	055.6721	0449.3	177.9	39.14
293.0	000.1800	0016.3	006.5	086.5	055.6174	0449.4	178.0	39.13
294.0	000.1800	0028.2	006.5	086.5	055.5632	0449.4	178.0	39.12
295.0	000.1800	0038.4	007.3	086.3	055.3172	0449.6	177.4	39.24
296.0	000.1800	0048.4	008.3	086.1	055.0001	0449.8	176.5	39.39
297.0	000.1800	0059.1	009.3	086.0	054.6797	0450.0	175.8	39.54
298.0	000.1800	0069.0	010.0	085.8	054.4175	0450.1	175.3	39.63
299.0	000.1800	0077.2	010.5	085.6	054.1878	0450.1	174.9	39.69
300.0	000.1800	0081.2	010.8	085.6	054.0317	0450.1	174.8	39.70
301.0	000.1740	0083.1	010.8	085.5	053.9404	0450.1	174.9	39.68
302.0	000.1682	0086.5	010.9	085.4	053.8240	0450.1	174.9	39.66
303.0	000.1624	0097.0	011.4	085.3	053.5821	0450.1	174.6	39.71
304.0	000.1568	0114.1	012.2	085.1	053.2379	0450.0	174.1	39.79
305.0	000.1513	0133.3	013.1	084.8	052.8759	0449.9	173.6	39.87
306.0	000.1458	0150.5	013.8	084.6	052.5245	0449.9	173.1	39.93
307.0	000.1404	0163.0	014.3	084.4	052.2573	0449.9	172.9	39.96
308.0	000.1352	0174.2	014.7	084.3	052.0248	0449.9	172.8	39.96
309.0	000.1300	0185.7	015.0	084.2	051.8150	0449.9	172.7	39.95
310.0	000.1250	0198.5	015.3	084.0	051.5916	0449.9	172.7	39.95
311.0	000.1265	0211.0	015.9	083.8	051.2894	0449.9	172.5	39.96
312.0	000.1280	0221.1	016.3	083.7	051.0138	0450.0	172.4	39.96
313.0	000.1295	0227.8	016.7	083.5	050.7888	0450.0	172.4	39.95
314.0	000.1311	0231.3	016.8	083.4	050.6144	0450.1	172.5	39.91
315.0	000.1326	0233.2	017.0	083.3	050.4644	0450.1	172.6	39.87
316.0	000.1342	0235.5	017.1	083.2	050.3109	0450.1	172.8	39.82
317.0	000.1357	0238.2	017.3	083.1	050.1510	0450.1	172.9	39.78
318.0	000.1373	0240.2	017.4	083.0	050.0049	0450.1	173.1	39.73
319.0	000.1389	0239.9	017.4	082.9	049.8970	0450.2	173.3	39.68
320.0	000.1404	0236.1	017.4	082.9	049.8467	0450.2	173.6	39.61
321.0	000.1474	0229.1	017.3	082.9	049.7825	0450.2	173.9	39.54
322.0	000.1551	0220.1	017.2	082.9	049.7553	0450.2	174.2	39.47
323.0	000.1630	0210.1	017.0	082.9	049.7585	0450.2	174.6	39.39
324.0	000.1705	0199.4	016.7	082.9	049.7933	0450.2	174.9	39.31
325.0	000.1782	0188.7	016.5	082.9	049.8380	0450.2	175.3	39.23
326.0	000.1867	0177.8	016.2	082.9	049.8933	0450.2	175.7	39.16
327.0	000.1953	0166.3	015.8	083.0	050.0066	0450.1	176.1	39.07
328.0	000.2035	0153.4	015.2	083.1	050.1991	0450.1	176.6	38.98
329.0	000.2119	0139.3	014.6	083.3	050.4443	0450.1	177.2	38.89
330.0	000.2211	0126.1	014.0	083.4	050.6642	0450.0	177.6	38.81
331.0	000.2326	0116.2	013.6	083.5	050.7822	0450.0	178.0	38.74
332.0	000.2443	0109.6	013.4	083.5	050.8370	0450.0	178.3	38.68
333.0	000.2563	0101.8	013.1	083.6	050.9450	0450.0	178.6	38.62
334.0	000.2686	0089.5	012.4	083.8	051.2076	0450.0	179.1	38.55
335.0	000.2813	0075.2	011.6	084.0	051.5642	0449.9	179.6	38.48
336.0	000.2941	0063.4	010.8	084.2	051.8753	0449.9	180.0	38.42
337.0	000.3073	0052.8	010.1	084.4	052.2209	0449.9	180.4	38.37
338.0	000.3208	0040.7	008.8	084.8	052.7919	0449.9	181.0	38.31
339.0	000.3346	0027.4	007.6	085.1	053.3407	0450.0	181.5	38.26
340.0	000.3486	0017.7	007.7	085.1	053.2804	0450.0	181.6	38.24
341.0	000.3621	0012.1	007.8	085.0	053.2241	0450.0	181.7	38.21
342.0	000.3767	0005.7	007.9	085.0	053.1670	0450.0	181.8	38.19
343.0	000.3907	-0004.0	007.9	085.0	053.1140	0450.0	181.9	38.16
344.0	000.4059	-0015.3	008.0	084.9	053.0589	0449.9	182.0	38.14
345.0	000.4214	-0022.1	008.1	084.9	053.0028	0449.9	182.2	38.11

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346.0  000.4362 -0022.1  008.2 | 084.9  052.9509  0449.9  182.3  38.08
347.0  000.4522 -0020.2  008.3 | 084.8  052.8984  0449.9  182.4  38.05
348.0  000.4675 -0027.0  008.3 | 084.8  052.8501  0449.9  182.5  38.02
349.0  000.4841 -0042.1  008.4 | 084.8  052.8013  0449.9  182.7  37.99
350.0  000.5000 -0057.3  008.5 | 084.8  052.7566  0449.9  182.8  37.97
351.0  000.5000 -0062.6  008.5 | 084.8  052.7495  0449.9  183.0  37.94
352.0  000.5000 -0059.1  008.5 | 084.7  052.7438  0449.9  183.1  37.91
353.0  000.5000 -0056.6  008.5 | 084.7  052.7394  0449.9  183.3  37.88
354.0  000.5000 -0059.1  008.5 | 084.7  052.7363  0449.9  183.4  37.86
355.0  000.5000 -0063.2  008.5 | 084.7  052.7344  0449.9  183.6  37.83
356.0  000.5000 -0060.2  008.5 | 084.7  052.7339  0449.9  183.7  37.80
357.0  000.5000 -0050.8  008.5 | 084.7  052.7347  0449.9  183.8  37.78
358.0  000.5000 -0041.2  008.5 | 084.7  052.7367  0449.9  184.0  37.75
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04-23-2021 Terrain Data: GLOBE 30 Sec FMOver Analysis

WSMC-FM BLED19940222KF	WZQS
Channel = 213C	Channel = 213A
Max ERP = 100 kW	Max ERP = 0.5 kW
RCAMSL = 705 m	RCAMSL = 882.7 m
N. Lat. 35 15 20.20	N. Lat. 35 18 50.20
W. Lng. 85 13 33.80	W. Lng. 83 12 04.10
Protected	Interfering
60 dBu	40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
357.0	054.0078	0147.5	052.6	284.5	000.1800	-0119.2	191.6	01.31	
358.0	053.2316	0147.3	052.4	284.5	000.1800	-0119.0	190.7	01.48	
359.0	052.4610	0149.8	052.6	284.6	000.1800	-0117.9	189.8	01.64	
000.0	051.6961	0154.5	053.1	284.9	000.1800	-0116.0	189.1	01.78	
001.0	050.2823	0159.2	053.4	285.0	000.1800	-0114.4	188.2	01.94	
002.0	048.8881	0164.5	053.8	285.2	000.1800	-0112.8	187.4	02.09	
003.0	047.5134	0167.7	053.9	285.3	000.1800	-0111.9	186.5	02.26	
004.0	046.1584	0169.4	053.8	285.3	000.1800	-0111.6	185.6	02.43	
005.0	044.8230	0170.3	053.7	285.3	000.1800	-0111.6	184.6	02.61	
006.0	043.5072	0172.3	053.6	285.3	000.1800	-0111.4	183.7	02.78	
007.0	042.2110	0176.6	053.8	285.4	000.1800	-0110.5	182.8	02.95	
008.0	040.9344	0180.9	053.9	285.5	000.1800	-0109.7	181.8	03.13	
009.0	039.6774	0185.2	054.0	285.6	000.1800	-0109.1	180.9	03.30	
010.0	038.4400	0189.0	054.0	285.6	000.1800	-0108.7	180.0	03.47	
011.0	037.2100	0192.1	054.0	285.6	000.1800	-0108.6	179.0	03.65	
012.0	036.0000	0195.2	054.0	285.6	000.1800	-0108.5	178.1	03.82	
013.0	034.8100	0197.6	053.9	285.6	000.1800	-0108.7	177.2	04.00	
014.0	033.6400	0198.6	053.7	285.5	000.1800	-0109.4	176.2	04.18	
015.0	032.4900	0198.4	053.3	285.4	000.1800	-0110.5	175.3	04.35	
016.0	031.3600	0199.0	053.1	285.3	000.1800	-0111.5	174.4	04.52	
017.0	030.2500	0200.6	052.9	285.3	000.1800	-0112.2	173.4	04.69	
018.0	029.1600	0202.2	052.7	285.2	000.1800	-0113.0	172.5	04.86	
019.0	028.0900	0204.1	052.5	285.1	000.1800	-0113.8	171.6	05.03	
020.0	027.0400	0207.4	052.4	285.0	000.1800	-0114.3	170.7	05.20	
021.0	026.4916	0212.1	052.6	285.1	000.1800	-0114.0	169.8	05.37	
022.0	025.9488	0215.2	052.7	285.0	000.1800	-0114.2	168.9	05.54	
023.0	025.4117	0216.4	052.6	285.0	000.1800	-0114.9	168.0	05.71	
024.0	024.8801	0216.5	052.4	284.9	000.1800	-0116.0	167.1	05.87	
025.0	024.3542	0217.7	052.3	284.8	000.1800	-0116.8	166.2	06.04	
026.0	023.8339	0221.2	052.4	284.7	000.1800	-0117.2	165.3	06.21	
027.0	023.3192	0227.2	052.7	284.7	000.1800	-0117.0	164.4	06.38	
028.0	022.8102	0235.7	053.1	284.8	000.1800	-0116.3	163.4	06.57	
029.0	022.3067	0246.9	053.8	284.9	000.1800	-0115.1	162.3	06.77	
030.0	021.8089	0258.6	054.4	285.1	000.1800	-0113.9	161.2	06.97	
031.0	021.7249	0267.6	055.0	285.2	000.1800	-0112.8	160.1	07.17	
032.0	021.6411	0274.4	055.5	285.2	000.1800	-0112.3	159.1	07.37	
033.0	021.5574	0282.0	056.0	285.3	000.1800	-0111.8	158.0	07.56	
034.0	021.4740	0290.4	056.5	285.4	000.1800	-0111.0	156.9	07.76	
035.0	021.3906	0300.0	057.1	285.5	000.1800	-0110.1	155.7	07.97	
036.0	021.3075	0309.4	057.7	285.5	000.1800	-0109.3	154.6	08.18	
037.0	021.2244	0319.8	058.4	285.6	000.1800	-0108.5	153.4	08.39	
038.0	021.1416	0330.5	059.1	285.7	000.1800	-0107.6	152.2	08.61	
039.0	021.0589	0340.6	059.8	285.8	000.1800	-0106.8	151.0	08.82	
040.0	020.9764	0349.7	060.3	285.8	000.1800	-0106.5	149.8	09.03	

041.0	021.1232	0357.0	060.9	285.8	000.1800	-0106.3	148.6	09.25
042.0	021.2705	0362.7	061.3	285.8	000.1800	-0106.7	147.4	09.45
043.0	021.4184	0367.3	061.7	285.7	000.1800	-0107.5	146.3	09.65
044.0	021.5667	0371.9	062.0	285.6	000.1800	-0108.3	145.2	09.86
045.0	021.7156	0376.2	062.4	285.5	000.1800	-0109.3	144.1	10.06
046.0	021.8650	0380.4	062.7	285.4	000.1800	-0110.5	143.0	10.26
047.0	022.0149	0384.1	063.0	285.3	000.1800	-0111.9	141.9	10.46
048.0	022.1653	0387.8	063.3	285.1	000.1800	-0113.2	140.8	10.66
049.0	022.3162	0391.6	063.6	285.0	000.1800	-0114.8	139.7	10.86
050.0	022.4676	0394.6	063.9	284.8	000.1800	-0116.5	138.7	11.06
051.0	022.8580	0397.6	064.2	284.6	000.1800	-0117.9	137.6	11.27
052.0	023.2517	0400.7	064.6	284.5	000.1800	-0119.3	136.5	11.47
053.0	023.6488	0404.0	065.0	284.3	000.1800	-0120.5	135.3	11.68
054.0	024.0492	0406.9	065.3	284.1	000.1800	-0121.7	134.3	11.89
055.0	024.4530	0409.1	065.6	283.9	000.1800	-0122.8	133.2	12.08
056.0	024.8602	0410.9	065.9	283.6	000.1800	-0123.6	132.2	12.28
057.0	025.2707	0412.7	066.2	283.4	000.1800	-0124.3	131.1	12.47
058.0	025.6846	0414.5	066.5	283.1	000.1800	-0124.5	130.1	12.66
059.0	026.1019	0415.6	066.7	282.8	000.1800	-0123.9	129.1	12.85
060.0	026.5225	0415.9	066.9	282.5	000.1800	-0122.1	128.2	13.02
061.0	027.2171	0416.8	067.2	282.2	000.1800	-0120.2	127.2	13.21
062.0	027.9207	0418.2	067.6	281.8	000.1800	-0118.1	126.2	13.41
063.0	028.6332	0419.8	068.0	281.5	000.1800	-0115.8	125.2	13.60
064.0	029.3547	0420.9	068.3	281.2	000.1800	-0113.4	124.2	13.79
065.0	030.0852	0421.4	068.6	280.8	000.1800	-0110.7	123.3	13.97
066.0	030.8247	0422.6	068.9	280.4	000.1800	-0108.3	122.3	14.15
067.0	031.5732	0424.5	069.3	280.0	000.1800	-0105.8	121.3	14.34
068.0	032.3306	0427.0	069.7	279.7	000.1800	-0103.2	120.3	14.53
069.0	033.0970	0430.2	070.2	279.3	000.1800	-0101.6	119.3	14.73
070.0	033.8724	0433.4	070.7	278.9	000.1800	-0100.5	118.3	14.92
071.0	034.9517	0436.2	071.2	278.4	000.1800	-0099.8	117.3	15.12
072.0	036.0480	0438.8	071.8	278.0	000.1800	-0099.6	116.3	15.32
073.0	037.1612	0440.8	072.2	277.5	000.1800	-0098.5	115.3	15.51
074.0	038.2913	0442.2	072.7	277.0	000.1800	-0095.4	114.4	15.68
075.0	039.4384	0444.1	073.1	276.5	000.1800	-0092.5	113.5	15.85
076.0	040.6024	0446.0	073.6	276.0	000.1800	-0091.6	112.7	16.02
077.0	041.7833	0447.9	074.1	275.4	000.1800	-0091.4	111.8	16.19
078.0	042.9811	0449.6	074.5	274.9	000.1800	-0092.0	111.1	16.34
079.0	044.1959	0450.8	074.9	274.3	000.1800	-0094.6	110.3	16.48
080.0	045.4276	0451.3	075.2	273.6	000.1800	-0097.7	109.7	16.61
081.0	046.9225	0451.2	075.6	273.0	000.1800	-0099.8	109.1	16.73
082.0	048.4416	0450.7	075.9	272.3	000.1800	-0094.4	108.6	16.84
083.0	049.9849	0450.2	076.2	271.7	000.1800	-0087.6	108.1	16.93
084.0	051.5524	0449.9	076.5	271.0	000.1800	-0080.6	107.6	17.03
085.0	053.1441	0450.0	076.9	270.3	000.1800	-0073.4	107.1	17.12
086.0	054.7600	0449.9	077.2	269.6	000.1800	-0066.1	106.7	17.19
087.0	056.4001	0449.2	077.4	268.9	000.1800	-0059.5	106.4	17.25
088.0	058.0644	0449.1	077.7	268.1	000.1800	-0052.1	106.1	17.31
089.0	059.7529	0448.9	078.0	267.4	000.1800	-0044.5	105.9	17.36
090.0	061.4656	0448.8	078.3	266.6	000.1800	-0036.7	105.7	17.40
091.0	062.9166	0448.4	078.6	265.9	000.1800	-0028.7	105.6	17.42
092.0	064.3846	0448.6	078.8	265.1	000.1800	-0019.8	105.5	17.44
093.0	065.8695	0448.9	079.1	264.4	000.1800	-0015.9	105.5	17.45
094.0	067.3713	0449.2	079.3	263.6	000.1800	-0016.5	105.5	17.45
095.0	068.8900	0448.8	079.5	262.8	000.1800	-0019.5	105.6	17.43
096.0	070.4257	0449.0	079.8	262.1	000.1800	-0022.4	105.7	17.41
097.0	071.9783	0449.4	080.0	261.3	000.1800	-0023.4	105.8	17.38
098.0	073.5478	0450.7	080.4	260.5	000.1800	-0022.5	105.9	17.36
099.0	075.1342	0452.7	080.7	259.8	000.1790	-0020.9	106.0	17.31
100.0	076.7376	0454.5	081.1	259.0	000.1757	-0018.0	106.2	17.19
101.0	077.9159	0455.7	081.3	258.2	000.1726	-0015.1	106.6	17.05
102.0	079.1032	0455.6	081.5	257.5	000.1696	-0013.5	107.0	16.88
103.0	080.2995	0454.8	081.6	256.8	000.1668	-0013.8	107.6	16.70

104.0	081.5048	0454.0	081.7	256.1	000.1640	-0015.6	108.2	16.51
105.0	082.7190	0453.9	081.8	255.4	000.1612	-0017.3	108.7	16.32
106.0	083.9422	0454.5	082.0	254.7	000.1585	-0018.3	109.3	16.13
107.0	085.1744	0455.5	082.2	254.0	000.1558	-0016.2	109.9	15.93
108.0	086.4156	0456.6	082.5	253.3	000.1531	-0009.0	110.6	15.73
109.0	087.6658	0456.8	082.6	252.7	000.1507	0001.7	111.3	15.52
110.0	088.9249	0456.0	082.7	252.1	000.1483	0014.5	112.1	15.29
111.0	089.6998	0455.0	082.7	251.5	000.1462	0026.7	113.1	15.05
112.0	090.4781	0454.6	082.8	251.0	000.1440	0038.1	114.0	15.23
113.0	091.2598	0455.3	082.9	250.4	000.1419	0048.2	114.9	15.50
114.0	092.0448	0456.2	083.1	249.8	000.1411	0055.7	115.8	15.64
115.0	092.8332	0456.4	083.2	249.3	000.1431	0060.7	116.7	15.71
116.0	093.6250	0456.4	083.2	248.8	000.1450	0062.6	117.7	15.65
117.0	094.4201	0456.2	083.3	248.3	000.1469	0062.3	118.8	15.51
118.0	095.2186	0456.1	083.4	247.8	000.1486	0060.6	119.9	15.31
119.0	096.0204	0455.8	083.4	247.4	000.1504	0058.3	121.0	15.07
120.0	096.8256	0454.9	083.5	247.0	000.1520	0055.7	122.1	14.81
121.0	097.1407	0453.7	083.4	246.6	000.1534	0053.4	123.4	14.52
122.0	097.4564	0452.9	083.4	246.2	000.1548	0050.7	124.6	14.21
123.0	097.7726	0453.5	083.5	245.8	000.1563	0047.5	125.8	13.88
124.0	098.0892	0455.3	083.6	245.4	000.1579	0043.9	127.0	13.51
125.0	098.4064	0457.9	083.8	245.0	000.1595	0039.8	128.1	13.11
126.0	098.7241	0460.1	084.0	244.6	000.1610	0035.7	129.3	12.68
127.0	099.0423	0462.0	084.2	244.3	000.1624	0031.8	130.6	12.25
128.0	099.3610	0463.7	084.3	244.0	000.1638	0027.9	131.8	11.93
129.0	099.6803	0465.8	084.5	243.6	000.1651	0023.9	133.1	11.73
130.0	100.0000	0468.4	084.7	243.3	000.1664	0019.5	134.4	11.52
131.0	100.0000	0471.1	084.9	243.0	000.1676	0015.2	135.7	11.31
132.0	100.0000	0473.4	085.1	242.7	000.1688	0011.2	137.0	11.09
133.0	100.0000	0475.2	085.2	242.5	000.1698	0007.6	138.4	10.86
134.0	100.0000	0476.7	085.3	242.2	000.1707	0004.4	139.8	10.62
135.0	100.0000	0477.8	085.3	242.0	000.1715	0001.7	141.2	10.38
136.0	100.0000	0478.3	085.4	241.9	000.1722	-0000.3	142.6	10.14
137.0	100.0000	0478.3	085.4	241.7	000.1728	-0001.8	144.1	09.89
138.0	100.0000	0478.3	085.4	241.6	000.1734	-0003.1	145.5	09.64
139.0	100.0000	0478.4	085.4	241.5	000.1739	-0004.2	147.0	09.38
140.0	100.0000	0478.0	085.4	241.4	000.1743	-0005.1	148.4	09.13
141.0	100.0000	0477.4	085.3	241.3	000.1746	-0005.7	149.9	08.88
142.0	100.0000	0476.7	085.3	241.2	000.1749	-0006.3	151.4	08.62
143.0	100.0000	0476.1	085.2	241.2	000.1751	-0006.7	152.9	08.36
144.0	100.0000	0475.4	085.2	241.1	000.1753	-0007.0	154.4	08.10
145.0	100.0000	0474.8	085.2	241.1	000.1755	-0007.2	155.8	07.84
146.0	100.0000	0474.3	085.1	241.1	000.1756	-0007.3	157.3	07.58
147.0	100.0000	0473.7	085.1	241.0	000.1757	-0007.5	158.8	07.31
148.0	100.0000	0472.7	085.0	241.0	000.1757	-0007.4	160.3	07.04
149.0	100.0000	0471.8	085.0	241.0	000.1756	-0007.4	161.8	06.76
150.0	100.0000	0471.1	084.9	241.1	000.1756	-0007.3	163.3	06.48
151.0	100.0000	0470.6	084.9	241.1	000.1755	-0007.2	164.7	06.20
152.0	100.0000	0470.2	084.9	241.1	000.1754	-0007.1	166.2	05.93
153.0	100.0000	0470.3	084.9	241.1	000.1753	-0007.0	167.7	05.65
154.0	100.0000	0471.0	084.9	241.1	000.1753	-0006.9	169.2	05.37
155.0	100.0000	0471.9	085.0	241.2	000.1752	-0006.8	170.7	05.09
156.0	100.0000	0472.1	085.0	241.2	000.1750	-0006.5	172.1	04.81
157.0	100.0000	0471.8	085.0	241.3	000.1747	-0006.1	173.6	04.53
158.0	100.0000	0471.3	084.9	241.3	000.1744	-0005.4	175.1	04.25
159.0	100.0000	0471.2	084.9	241.4	000.1741	-0004.8	176.5	03.97
160.0	100.0000	0471.2	084.9	241.5	000.1738	-0004.2	178.0	03.69
161.0	100.0000	0471.0	084.9	241.6	000.1735	-0003.4	179.5	03.41
162.0	100.0000	0470.0	084.8	241.7	000.1730	-0002.3	180.9	03.13
163.0	100.0000	0469.3	084.8	241.8	000.1726	-0001.1	182.3	02.85
164.0	100.0000	0469.3	084.8	241.9	000.1721	-0000.1	183.8	02.57
165.0	100.0000	0470.4	084.9	242.0	000.1718	0000.9	185.2	02.29
166.0	100.0000	0471.0	084.9	242.1	000.1714	0002.2	186.7	02.01

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167.0  100.0000  0469.9  084.8 | 242.2  000.1708  0004.1  188.1  01.73
168.0  100.0000  0467.2  084.6 | 242.4  000.1700  0006.7  189.5  01.46
169.0  100.0000  0466.2  084.6 | 242.6  000.1694  0008.8  190.9  01.18
170.0  100.0000  0467.5  084.7 | 242.7  000.1690  0010.5  192.3  00.91
171.0  100.0000  0469.7  084.8 | 242.8  000.1686  0011.9  193.7  00.63
172.0  100.0000  0470.7  084.9 | 242.9  000.1680  0013.9  195.1  00.36
173.0  100.0000  0473.2  085.0 | 243.0  000.1676  0015.4  196.6  00.10
174.0  100.0000  0475.4  085.2 | 243.1  000.1671  0017.1  198.0  -00.14
175.0  100.0000  0477.1  085.3 | 243.3  000.1666  0019.1  199.4  -00.38
176.0  100.0000  0477.0  085.3 | 243.4  000.1659  0021.4  200.8  -00.61
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```

Figure 1: Allocation Study
Western North Carolina Public Radio

FMCommander Full Allocation Study - GLOBE 30 Sec

04-23-2021

WZQS CH 213 A DA
Lat= 35 18 50.20, Lng= 83 12 04.1
0.5 kW -23.7 m HAAT, 882.7 m COR

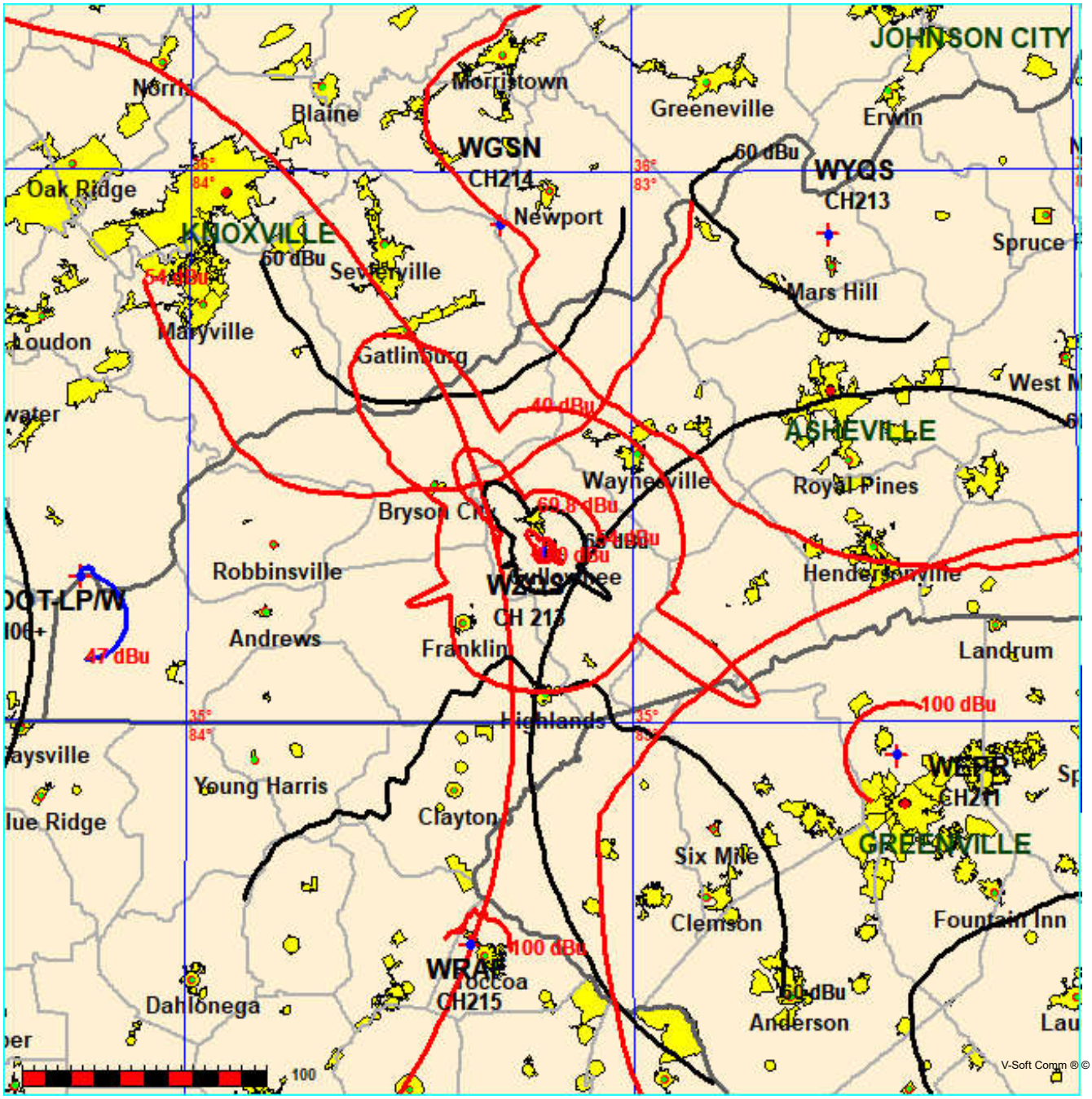


Figure 2: Allocation Study: WGSN
Western North Carolina Public Radio

FMCommander Single Allocation Study - 04-23-2021 - GLOBE 30 Sec
WZQS's Overlaps (In= 0.16 km, Out= 12.73 km)

WZQS CH 213 A DA
Lat= 35 18 50.20, Lng= 83 12 04.10
0.5 kW -23.7 m HAAT, 882.7 m COR
Prot.= 60 dBu, Intef.= 54 dBu

WGSN CH 214 C2 DA BLED20080926ABP
Lat= 35 54 20.30, Lng= 83 17 47.50
1.0 kW 700 m HAAT, 1113 m COR
Prot.= 60 dBu, Intef.= 54 dBu

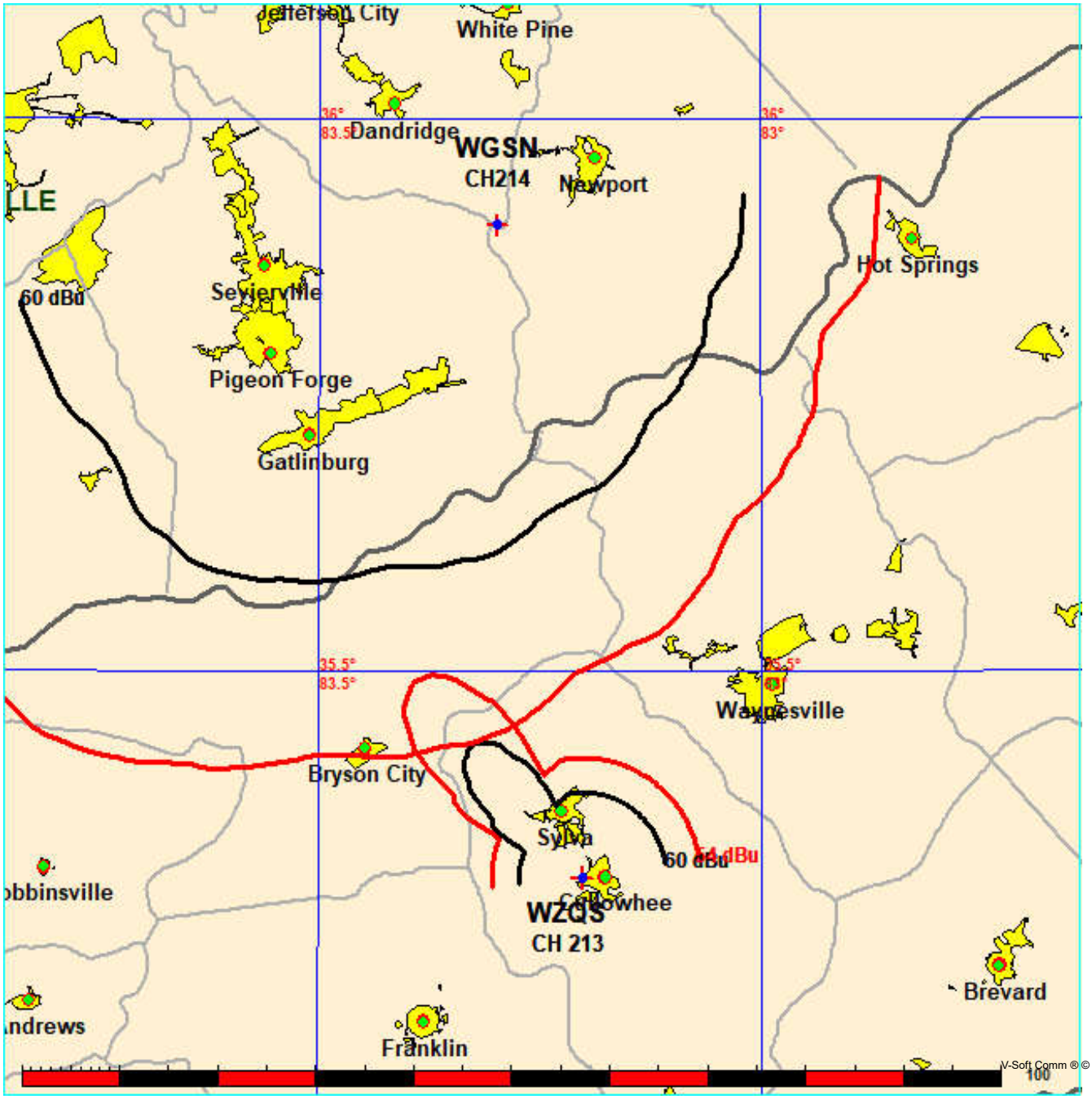


Figure 2A: Allocation Study: WGSN Detail
Western North Carolina Public Radio

FMCommander Single Allocation Study - 04-23-2021 - GLOBE 30 Sec
WZQS's Overlaps (In= 0.16 km, Out= 12.73 km)

WZQS CH 213 A DA
Lat= 35 18 50.20, Lng= 83 12 04.10
0.5 kW -23.7 m HAAT, 882.7 m COR
Prot.= 60 dBu, Intef.= 54 dBu

WGSN CH 214 C2 DA BLED20080926ABP
Lat= 35 54 20.30, Lng= 83 17 47.50
1.0 kW 700 m HAAT, 1113 m COR
Prot.= 60 dBu, Intef.= 54 dBu

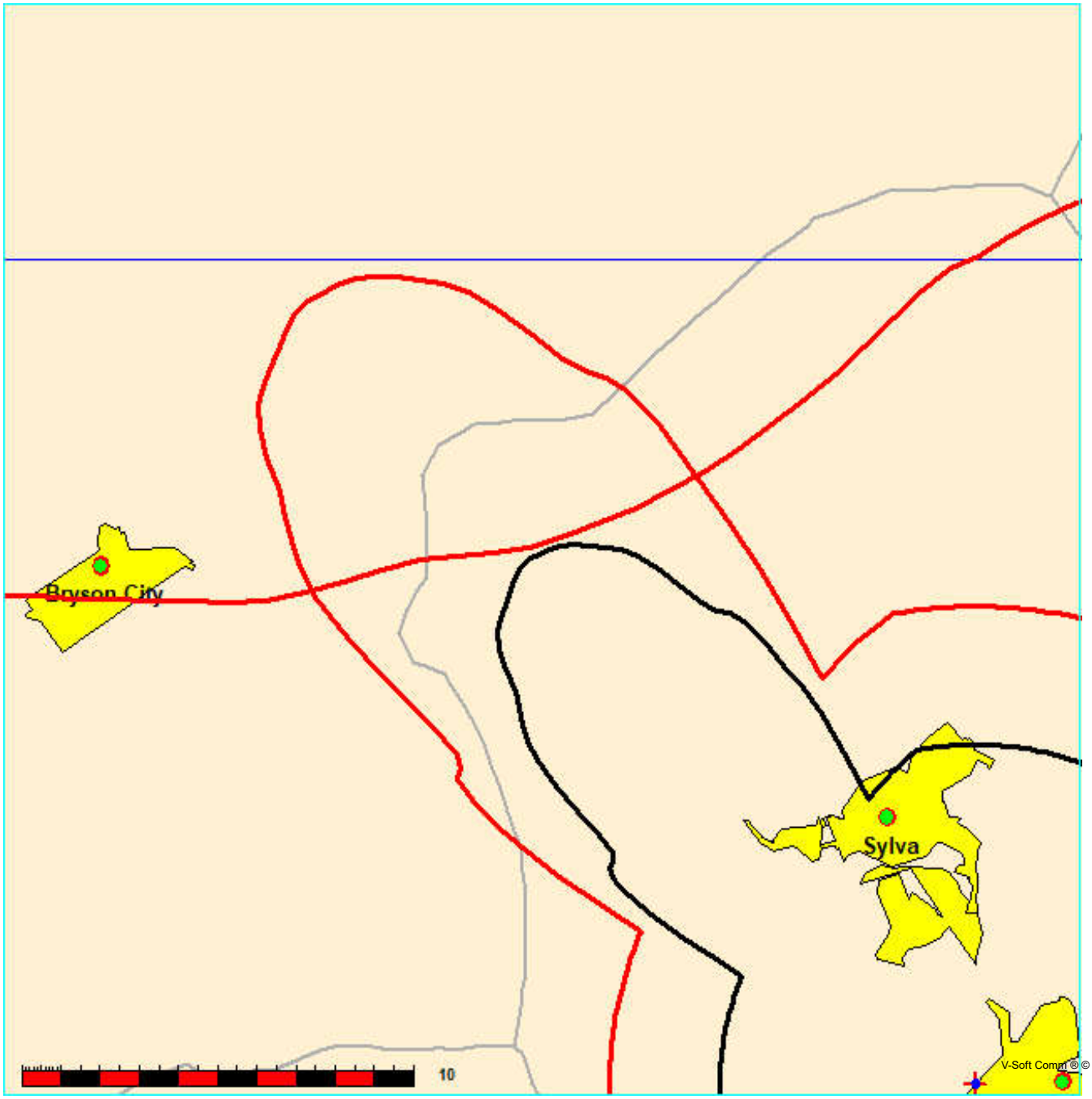


Figure 3: Allocation Study: WSMC-FM
Western North Carolina Public Radio

FMCommander Single Allocation Study - 04-23-2021 - GLOBE 30 Sec
WZQS's Overlaps (In= 0.17 km, Out= 83.65 km)

WZQS CH 213 A DA
Lat= 35 18 50.20, Lng= 83 12 04.10
0.5 kW -23.7 m HAAT, 882.7 m COR
Prot.= 60 dBu, Intef.= 40 dBu

WSMC-FM CH 213 C DA BLED19940222KF
Lat= 35 15 20.20, Lng= 85 13 33.80
100.0 kW 314 m HAAT, 705 m COR
Prot.= 60 dBu, Intef.= 40 dBu

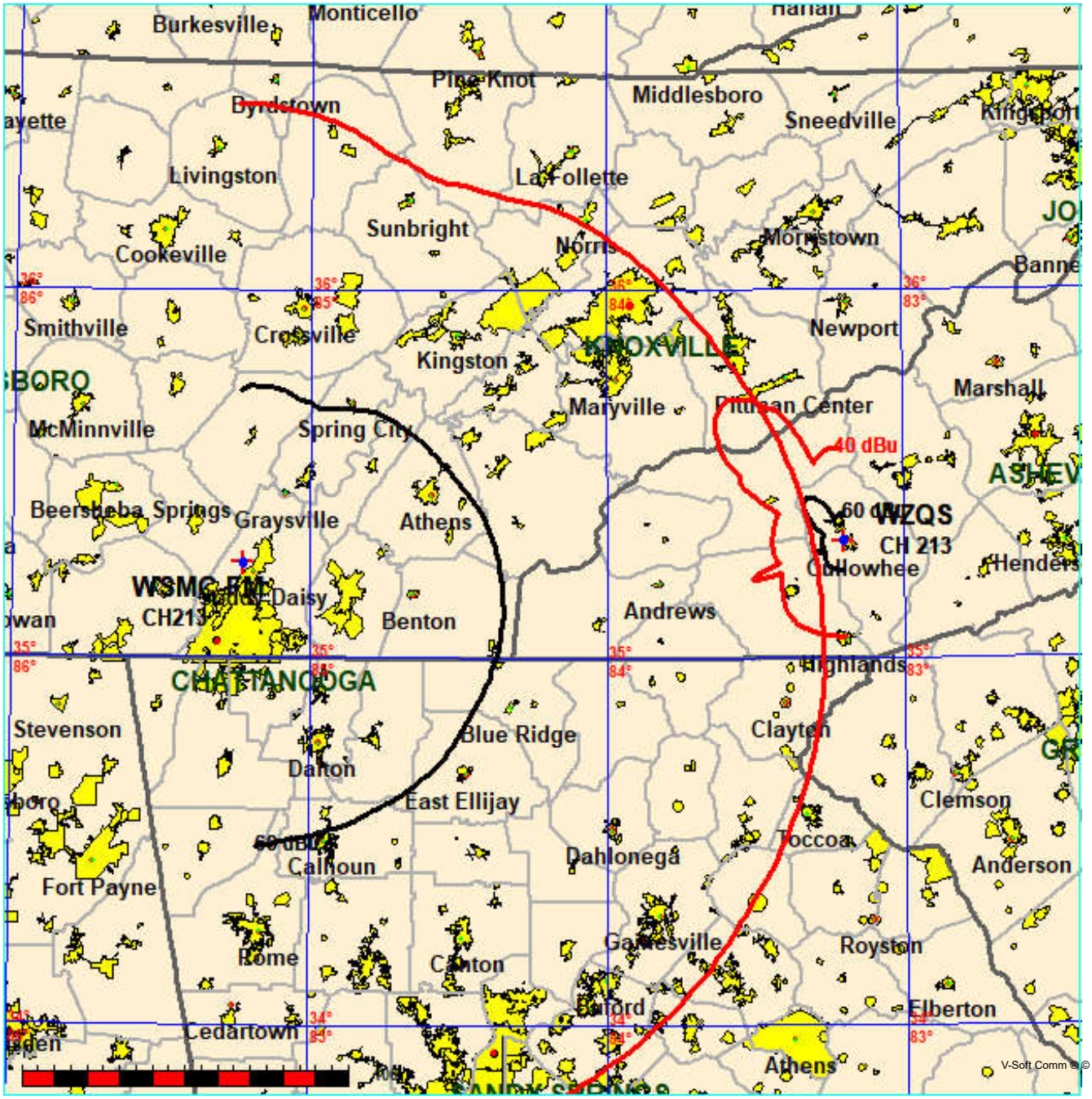


Figure 3A: Allocation Study: WSMC-FM Detail
Western North Carolina Public Radio

FMCommander Single Allocation Study - 04-23-2021 - GLOBE 30 Sec
WZQS's Overlaps (In= 0.17 km, Out= 83.65 km)

WZQS CH 213 A DA
Lat= 35 18 50.20, Lng= 83 12 04.10
0.5 kW -23.7 m HAAT, 882.7 m COR
Prot.= 60 dBu, Intef.= 40 dBu

WSMC-FM CH 213 C DA BLED19940222KF
Lat= 35 15 20.20, Lng= 85 13 33.80
100.0 kW 314 m HAAT, 705 m COR
Prot.= 60 dBu, Intef.= 40 dBu

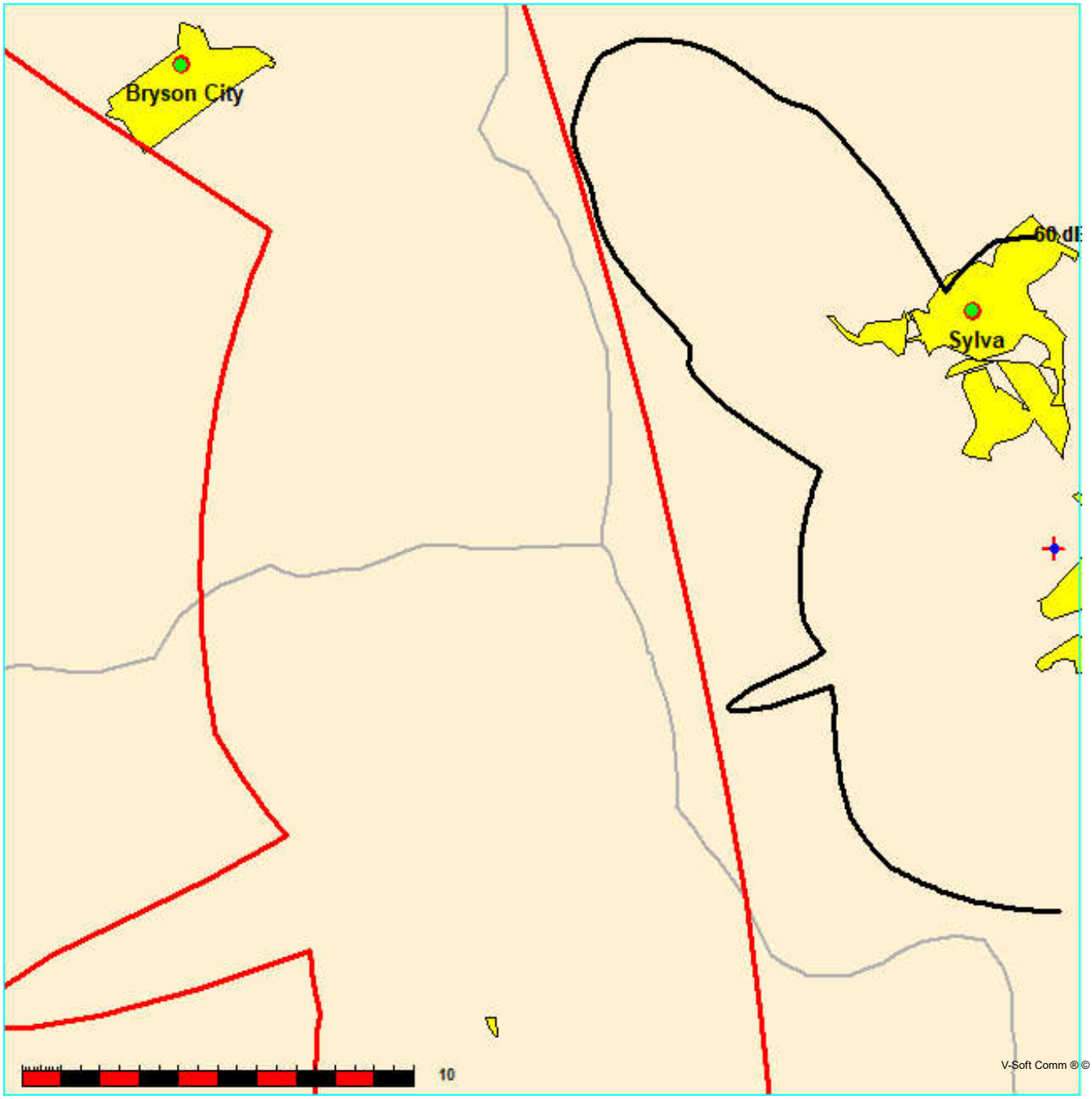
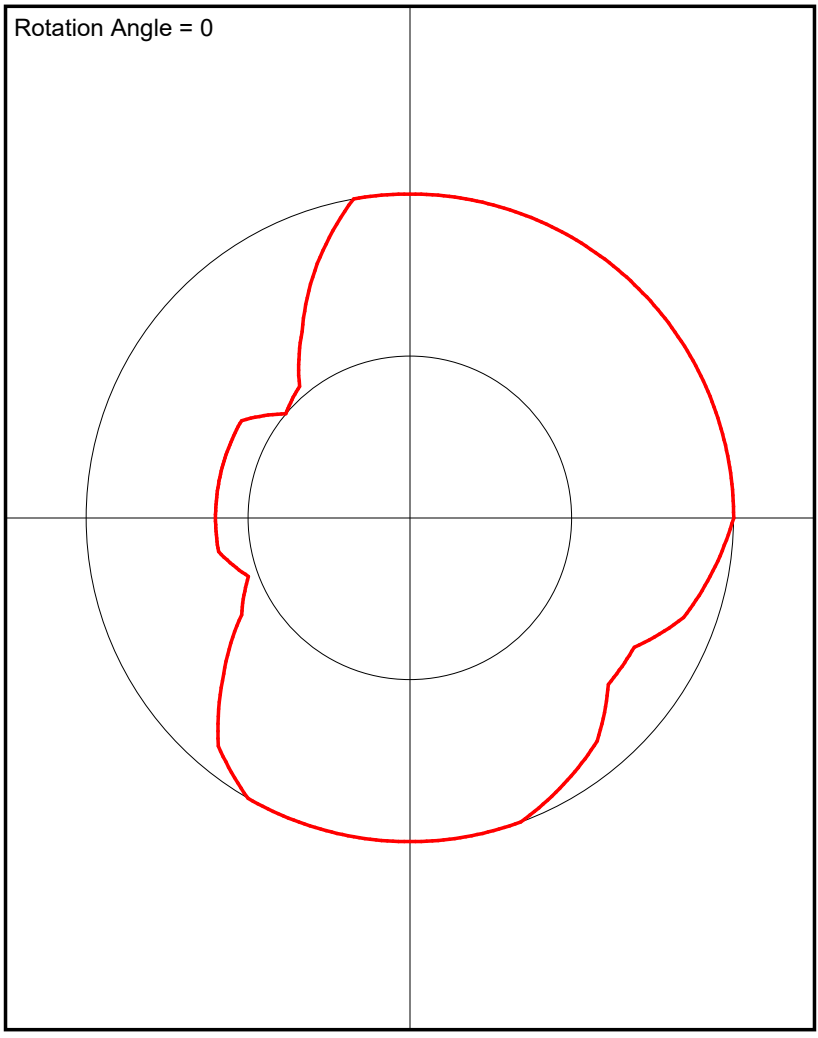
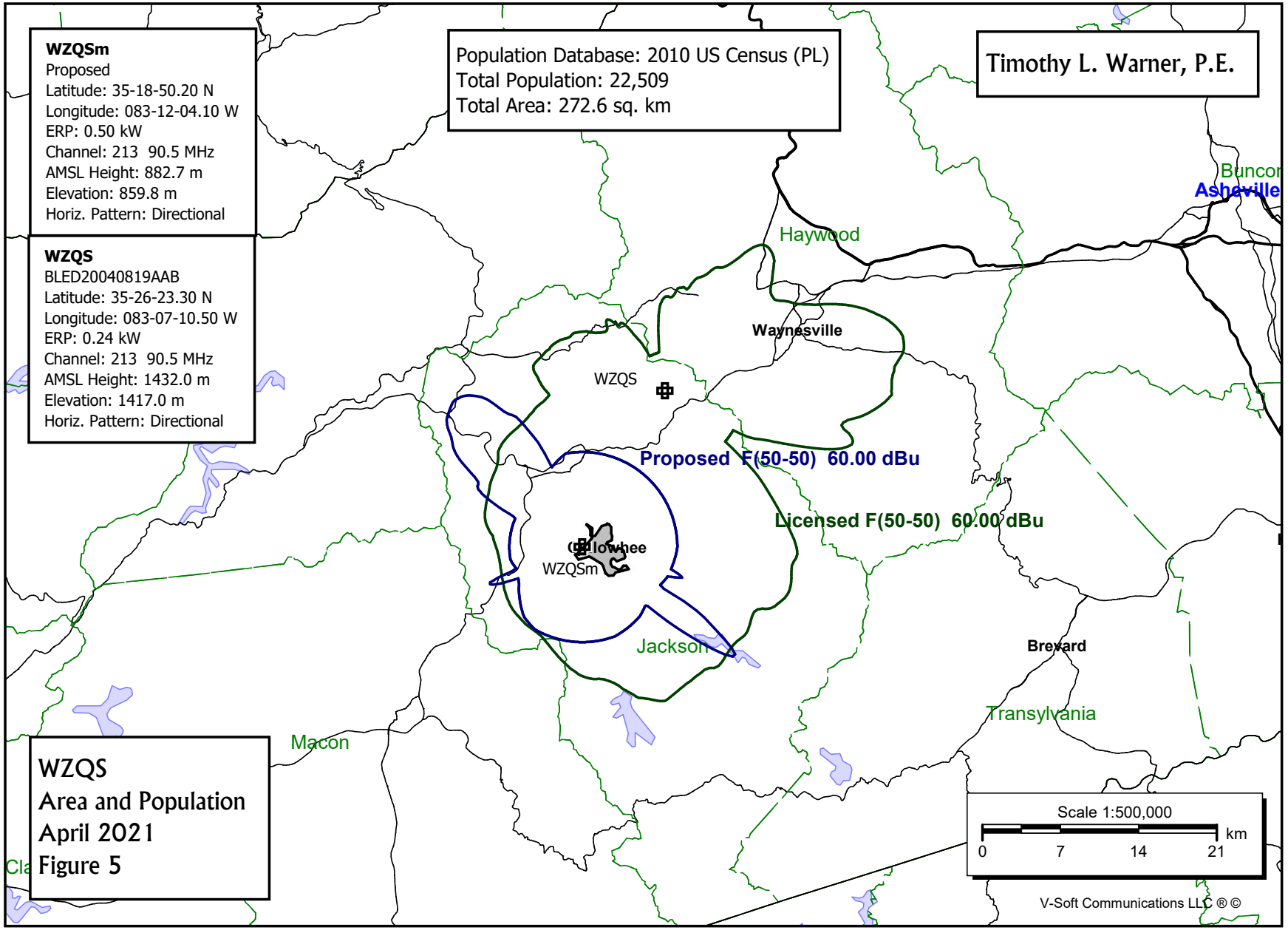


Figure 4: Directional Pattern

Pre-Rotation Antenna Pattern....

Azimuth (deg)	Relative Field
0.0	1.0
10.0	1.0
20.0	1.0
30.0	1.0
40.0	1.0
50.0	1.0
60.0	1.0
70.0	1.0
80.0	1.0
90.0	1.0
100.0	0.95
110.0	0.9
120.0	0.8
130.0	0.8
140.0	0.9
150.0	0.95
160.0	1.0
170.0	1.0
180.0	1.0
190.0	1.0
200.0	1.0
210.0	1.0
220.0	0.92
230.0	0.75
240.0	0.6
250.0	0.53
260.0	0.6
270.0	0.6
280.0	0.6
290.0	0.6
300.0	0.6
310.0	0.5
320.0	0.53
330.0	0.665
340.0	0.835
350.0	1.0




WZQSm
Proposed
Latitude: 35-18-50.20 N
Longitude: 083-12-04.10 W
ERP: 0.50 kW
Channel: 213 90.5 MHz
AMSL Height: 882.7 m
Elevation: 859.8 m
Horiz. Pattern: Directional
WZQS
BLED20040819AAB
Latitude: 35-26-23.30 N
Longitude: 083-07-10.50 W
ERP: 0.24 kW
Channel: 213 90.5 MHz
AMSL Height: 1432.0 m
Elevation: 1417.0 m
Horiz. Pattern: Directional
Population Database: 2010 US Census (PL)
Total Population: 22,509
Total Area: 272.6 sq. km
Timothy L. Warner, P.E.
Haywood
Waynesville
Asheville
WZQS
Proposed F(50-50) 60.00 dBu
Licensed F(50-50) 60.00 dBu
Dillsboro
WZQSm
Jackson
Brevard
Transylvania
Macon
Scale 1:500,000
km
0
7
14
21
V-Soft Communications LLC ® ©
WZQS
Area and Population
April 2021
Figure 5