

ENGINEERING TECHNICAL STATEMENT PREPARED BY RYAN WILHOUR OF THE FIRM KESSLER AND GEHMAN ASSOCIATES, INC., TELECOMMUNICATIONS CONSULTING ENGINEERS IN CONNECTION WITH A REQUEST FOR SPECIAL TEMPORARY AUTHORITY TO OPERATE THE WEST VIRGINIA EDUCATIONAL BROADCASTING AUTHORITY (“WVEBA”) FM BROADCAST STATION WVWS(FM) AT REDUCED FACILITIES RELATIVE TO THE CONSTRUCTION PERMITTED FACILITY HAVING FCC FILE NUMBER BPED-20150327ABG

## **DISCUSSION**

WVWS(FM) has a license, Construction Permit “CP”, and most recently a Special Temporary Authority “STA” to remain silent. The license specifies the antenna to be mounted at 90 meters AGL on a self-supporting tower having ASR number 1274614 which is owned by the State of West Virginia, DHHR/BPH State Trauma Emergency Care System. Beginning on November 17, 2014 the tower underwent an inspection along with maintenance and repair which required the temporary removal of the WVWS(FM) broadcast antenna. An STA (FCC File NO.: BLSTA-20141107ACB) was filed and granted and a subsequent extension of time (FCC File No.: BLESTA-20150420AAD) was filed and granted to remain silent while the work was being completed. A conclusion of the tower inspection and maintenance requires WVWS(FM) to mount the antenna 16.8 meters lower than what’s license. A CP (FCC File No.: BPED-20150327ABG) was filed and granted for the lower height.

The WVWS(FM) antenna removed from the tower and stored within the tower compound was purloined on or around August 9, 2015. The loss of the antenna will

further delay the construction and build out pursuant to the CP. The CP antenna is directional and a substitute “off the shelf” antenna cannot be quickly acquired and built to meet the specifications of the CP. Antenna fabrication, proof of performance, and a license to cover application will take an unspecified amount of time to complete; however, it will be well before May 15, 2018 which is the expiration date of the CP.

The instant STA proposes to temporarily install an “off the shelf” single bay circularly polarized omni-directional antenna at the permitted height using reduced power such that the facility will not have an ERP in any azimuth direction which exceeds the permitted ERP. The STA request is justified and will best serve the public interest because it will allow the facility go back on-the-air and serve its community of license by the beginning of September 2015 as an alternative to being dark for an unspecified amount of time while a new custom antenna is fabricated. Shortly after the new directional CP antenna is installed, the facility shall operate pursuant to program test authority and a license to cover application will be immediately filed.

Exhibit 4.1 is a tower sketch and listing of the proposed STA technical parameters. The STA omni-directional antenna shall be mounted at the same height as the CP and shall operate at a reduced ERP. Exhibit 4.2 demonstrates that for all azimuth degrees the STA ERP does not exceed the permitted ERP. Exhibit 4.4 demonstrates that the reduced ERP of the proposed STA keeps the coverage area completely subsumed by that of the WVWS(FM) CP facility and thus allocation studies for the instant STA are not necessary since no new interference would be caused to

surrounding facilities. Exhibit 4.4 further demonstrates that the STA will continue to cover Webster Springs, WV which is the WVWS(FM) community of license.

### **ENVIRONMENTAL IMPACT / RFR HAZARD ANALYSIS**

A theoretical analysis has been conducted of the human exposure to radio frequency radiation (“RFR”) using the calculation methodology described in OET Bulletin 65, Edition 97-01, pursuant to the following methodology:

Terrain<sup>1</sup> extraction is compiled from the proposed tower site to radial lengths of 0.25 miles in 0.001 mile increments for 360 radials. The power density is calculated for each terrain point at 6 feet above ground level using the elevation and azimuth pattern of the proposed broadcast antenna. The power density calculations are conducted using the lower edge of the proposed channel frequency. To account for ground reflections, a coefficient of 1.6 was included in the calculation.

The resulting cylindrical polar analysis is then summarized into a coordinate plane graph using the following methodology:

Starting from the origin the maximum calculated RFR value is determined among the 360 degree radials for each 0.001 mile increment, the value is then converted into a percentage of the maximum allowable general

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<sup>1</sup> Terrain extraction is based upon a 3 arc second point spacing terrain database.

population or uncontrolled exposure and plotted as a function of perpendicular distance from the tower.

Exhibit 4.5 is the resulting RFR study demonstrating that the peak exposure is 0.025% of the most restrictive permissible exposure threshold. Pursuant to OET Bulletin 65 concerning multiple-user transmitter sites only those licensees whose transmitters produce power density levels greater than 5.0% of the exposure limit are considered significant contributors to RFR. Since the proposed operation is within 5% of the most permissible exposure at any location 2 meters above the ground, it is not considered a significant contributor to RFR exposure. Thus, contributions to exposure from other RF sources in the vicinity of the proposed facility were not taken into account. The instant application is compliant with the FCC limits for human exposure to RF radiation and thus is excluded from further environmental processing.

### **BLANKETING CONTOUR**

The blanketing 115 dBu contour would extend no more than 53 m pursuant to Section 73.318(a) of the FCC rules. If blanketing interference is caused to other communication facilities or the residents of this area, the applicant will take full responsibility for the elimination of any objectionable interference (including that caused by receiver-induced or other types of intermodulation) to these and other facilities in existence or authorized or to radio receivers in use prior to the grant of this application.

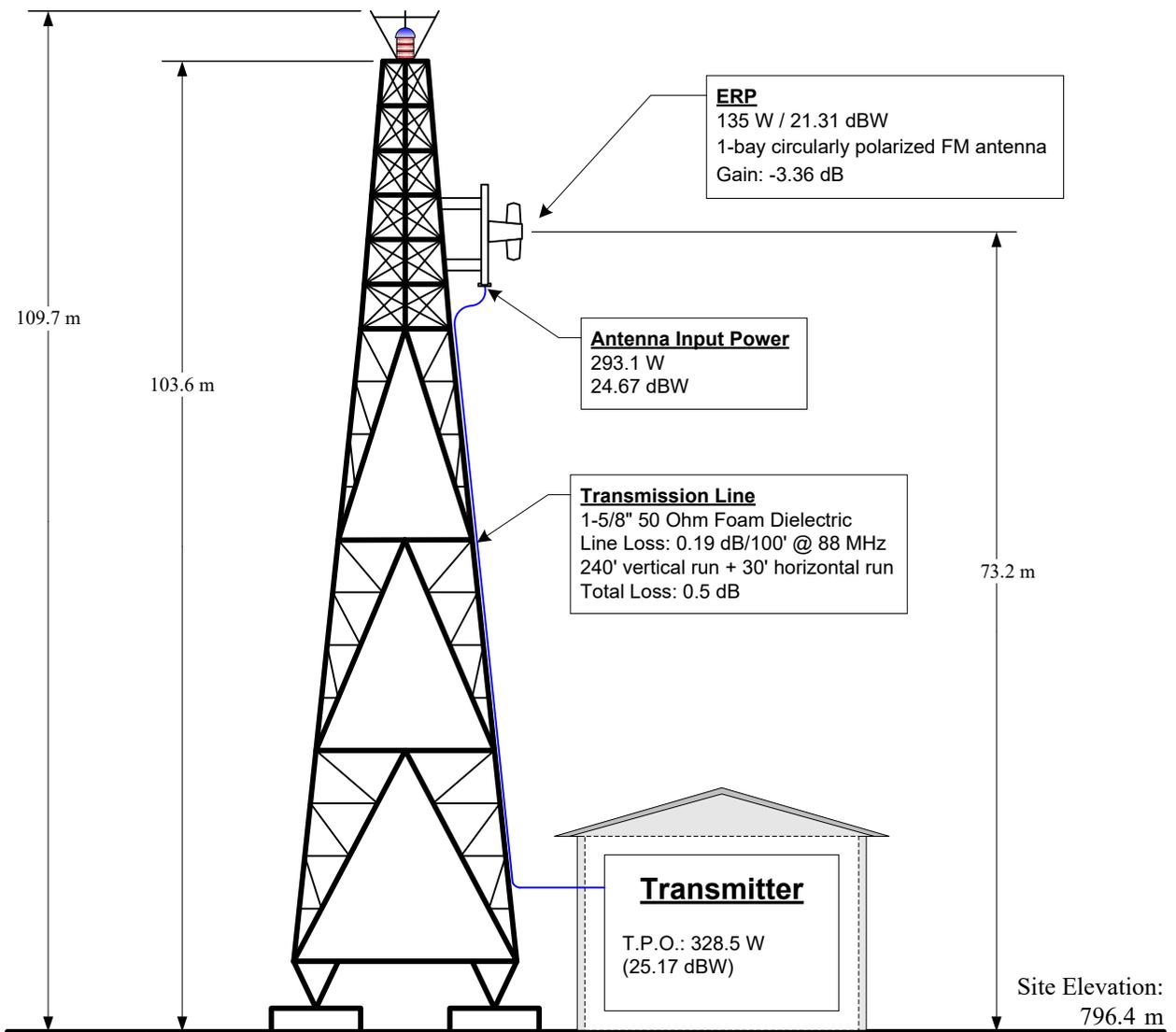
**CERTIFICATION**

The foregoing statement and the report regarding the aforementioned engineering work are true and correct to the best of my knowledge. Executed on August 24, 2015.

KESSLER AND GEHMAN ASSOCIATES, INC.

A handwritten signature in blue ink that reads 'Ryan Wilhour'.

Ryan Wilhour  
Consulting Engineer



Overall Height AGL:	109.7 m
Overall Height AMSL:	906.1 m
Radiation Center AGL:	73.2 m
Radiation Center AMSL:	869.6 m
Radiation Center HAAT:	248.2 m
Average Terrain:	621.4 m

NAD 27 Coordinates:	
N. Latitude:	38° 35' 46.4"
W. Longitude:	80° 23' 54.4"
ASR No.:	1274614
FAA Study No.:	2010-AEA-2031-OE

NOTE: NOT TO SCALE

**Kessler and Gehman Associates, Inc.**



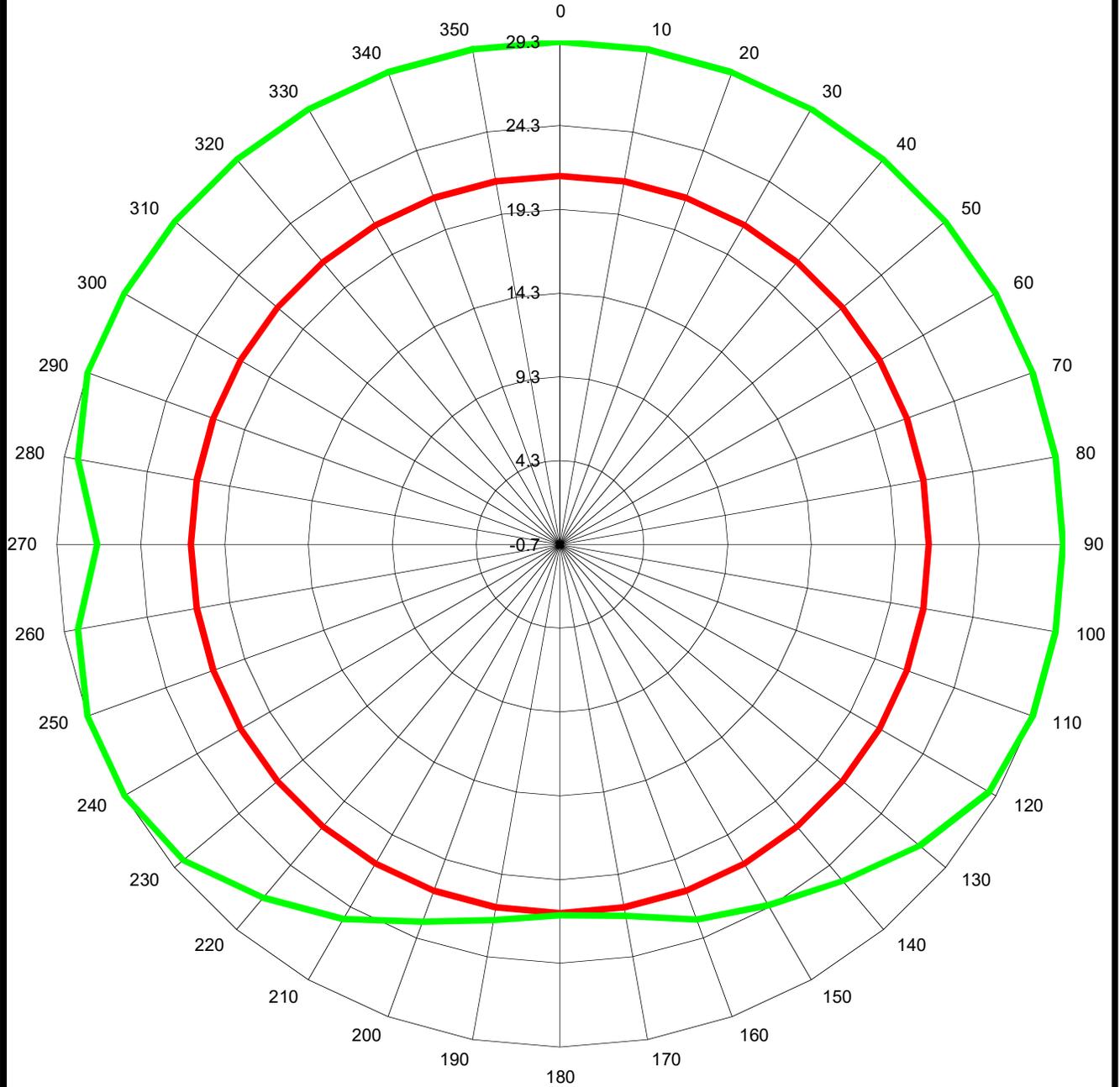
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WWWS(FM)  
WEBSTER SPRINGS, WV

20150821

EXHIBIT 4.1

# ERP - DBW Construction Permitted - VS - STA



GREEN LINE = Construction Permitted ERP-DBW

RED LINE = STA ERP-DBW

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Webster Springs, WV**

20150821

EXHIBIT 4.2.A

WVWS(FM)

WEBSTER SPRINGS, WV

<u>AZIMUTH</u>	<u>CP ERP (DB)</u>	<u>STA ERP (DB)</u>	<u>Meets ERP Margin BY (DB)</u>
N000°E	29.294	21.303	7.991
N010°E	29.294	21.303	7.991
N020°E	29.294	21.303	7.991
N030°E	29.294	21.303	7.991
N040°E	29.294	21.303	7.991
N050°E	29.294	21.303	7.991
N060°E	29.294	21.303	7.991
N070°E	29.294	21.303	7.991
N080°E	29.294	21.303	7.991
N090°E	29.294	21.303	7.991
N100°E	29.294	21.303	7.991
N110°E	29.294	21.303	7.991
N120°E	28.840	21.303	7.536
N130°E	27.291	21.303	5.987
N140°E	25.526	21.303	4.222
N150°E	24.180	21.303	2.877
N160°E	23.133	21.303	1.830
N170°E	21.821	21.303	0.518
N180°E	21.422	21.303	0.118
N190°E	22.064	21.303	0.761
N200°E	23.274	21.303	1.970
N210°E	25.128	21.303	3.825
N220°E	26.819	21.303	5.515
N230°E	28.608	21.303	7.304
N240°E	29.294	21.303	7.991
N250°E	29.294	21.303	7.991
N260°E	28.485	21.303	7.181
N270°E	26.888	21.303	5.584
N280°E	28.485	21.303	7.181
N290°E	29.294	21.303	7.991
N300°E	29.294	21.303	7.991
N310°E	29.294	21.303	7.991
N320°E	29.294	21.303	7.991
N330°E	29.294	21.303	7.991
N340°E	29.294	21.303	7.991
N350°E	29.294	21.303	7.991

**Kessler and Gehman Associates, Inc.**

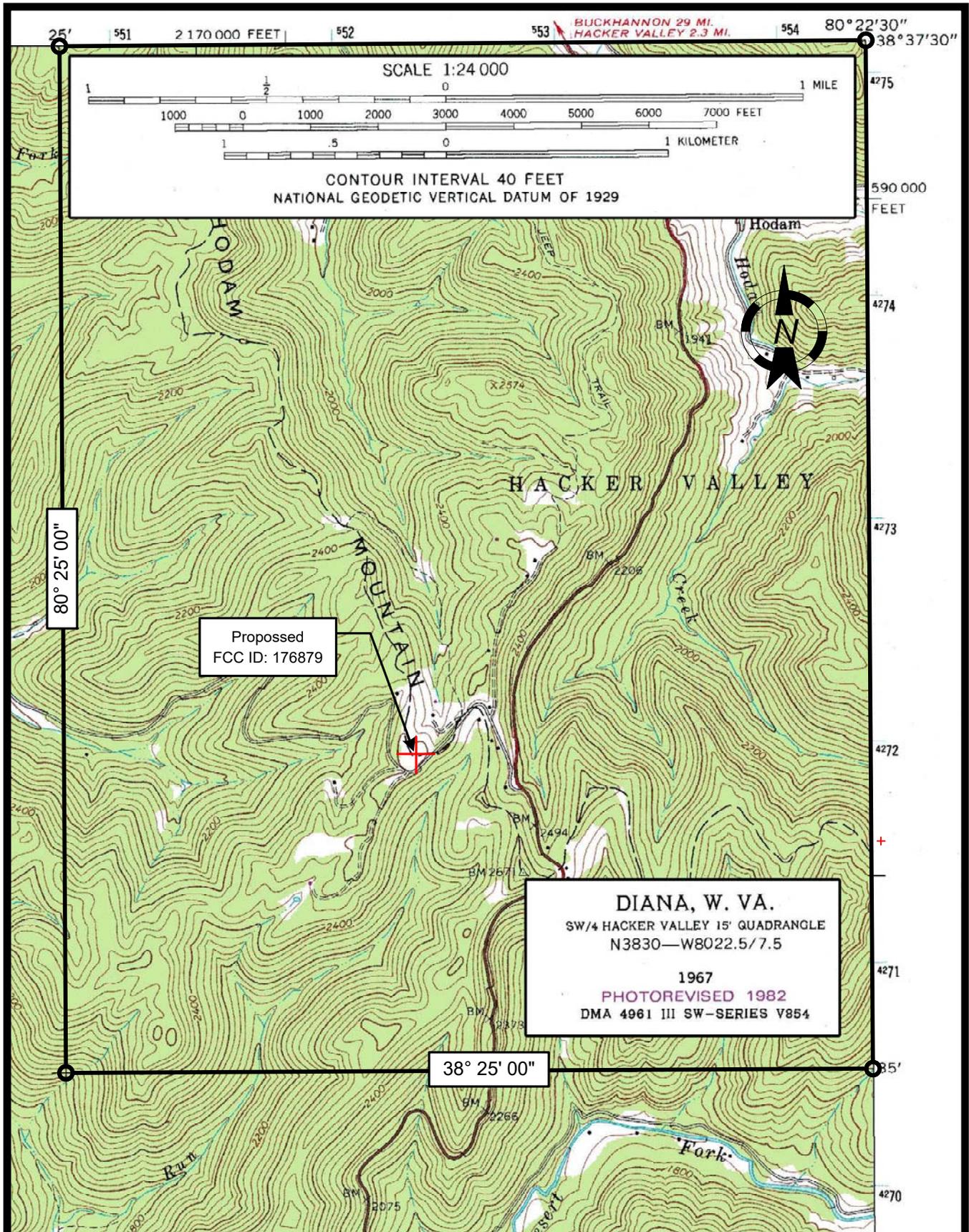


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 Webster Springs, WV**

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EXHIBIT 4.2.B



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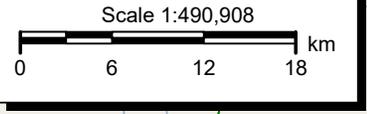
**WVSW(FM)  
WEBSTER SPRINGS, WV**

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EXHIBIT 4.3

# Exhibit 4.4 - CP and STA Coverage Area

**Proposed STA Coverage**  
 Population Database: 2010 US Census (PL)  
 -----  
 Total Population Within Contour: 5,448  
 Total Area Within Contour: 928.68 sq. km



- STA F(50,50) 60 DBU PROTECTED CONTOUR
- Construction Permitted F(50,50) 60 DBU PROTECTED CONTOUR

**WWWS.C**  
 BPED20150327ABG  
 Latitude: 38-35-46.40 N  
 Longitude: 080-23-54.40 W  
 ERP: 0.85 kW  
 Channel: 207  
 AMSL Height: 869.6 m  
 Horiz. Pattern: Directional

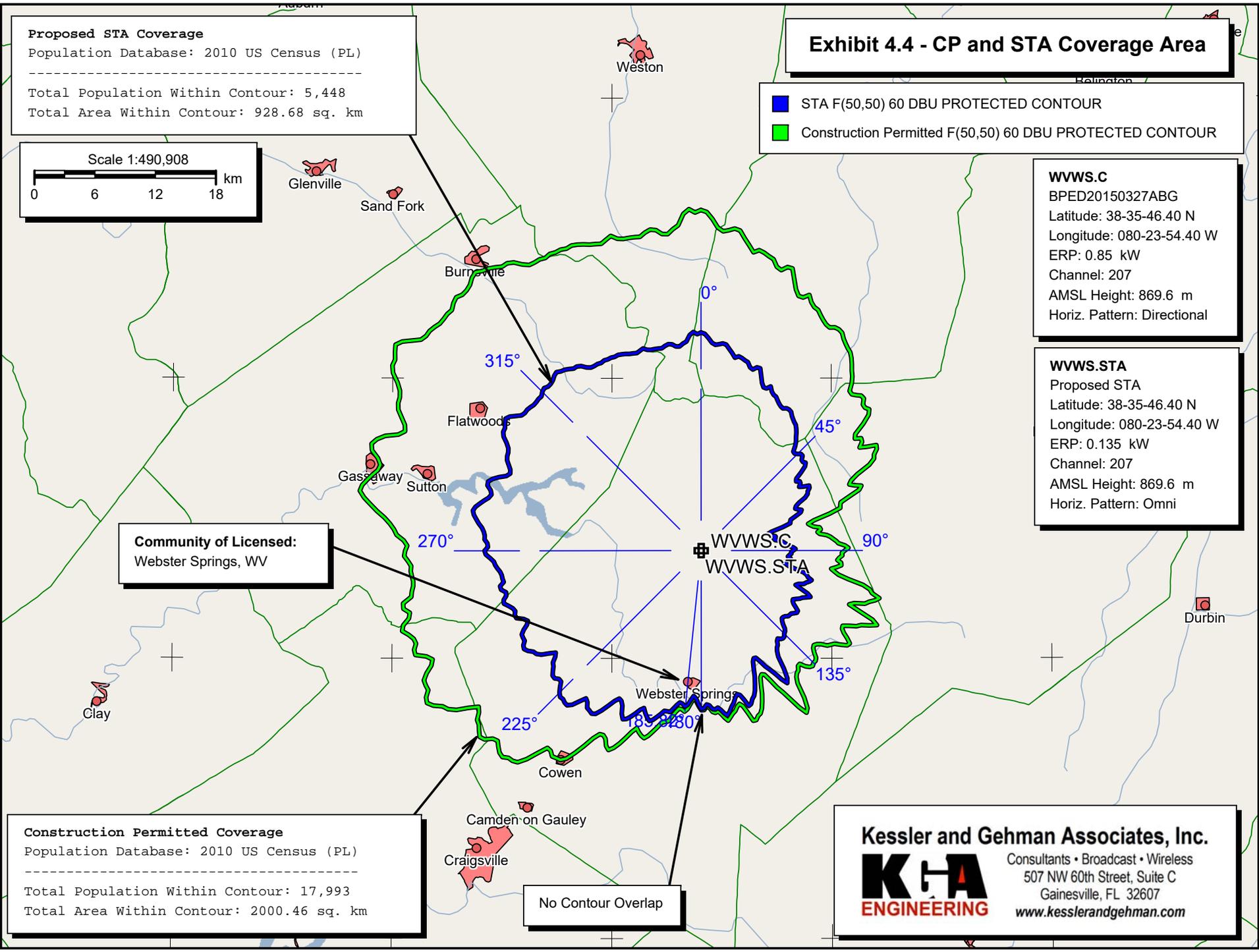
**WWWS.STA**  
 Proposed STA  
 Latitude: 38-35-46.40 N  
 Longitude: 080-23-54.40 W  
 ERP: 0.135 kW  
 Channel: 207  
 AMSL Height: 869.6 m  
 Horiz. Pattern: Omni

**Community of Licensed:**  
 Webster Springs, WV

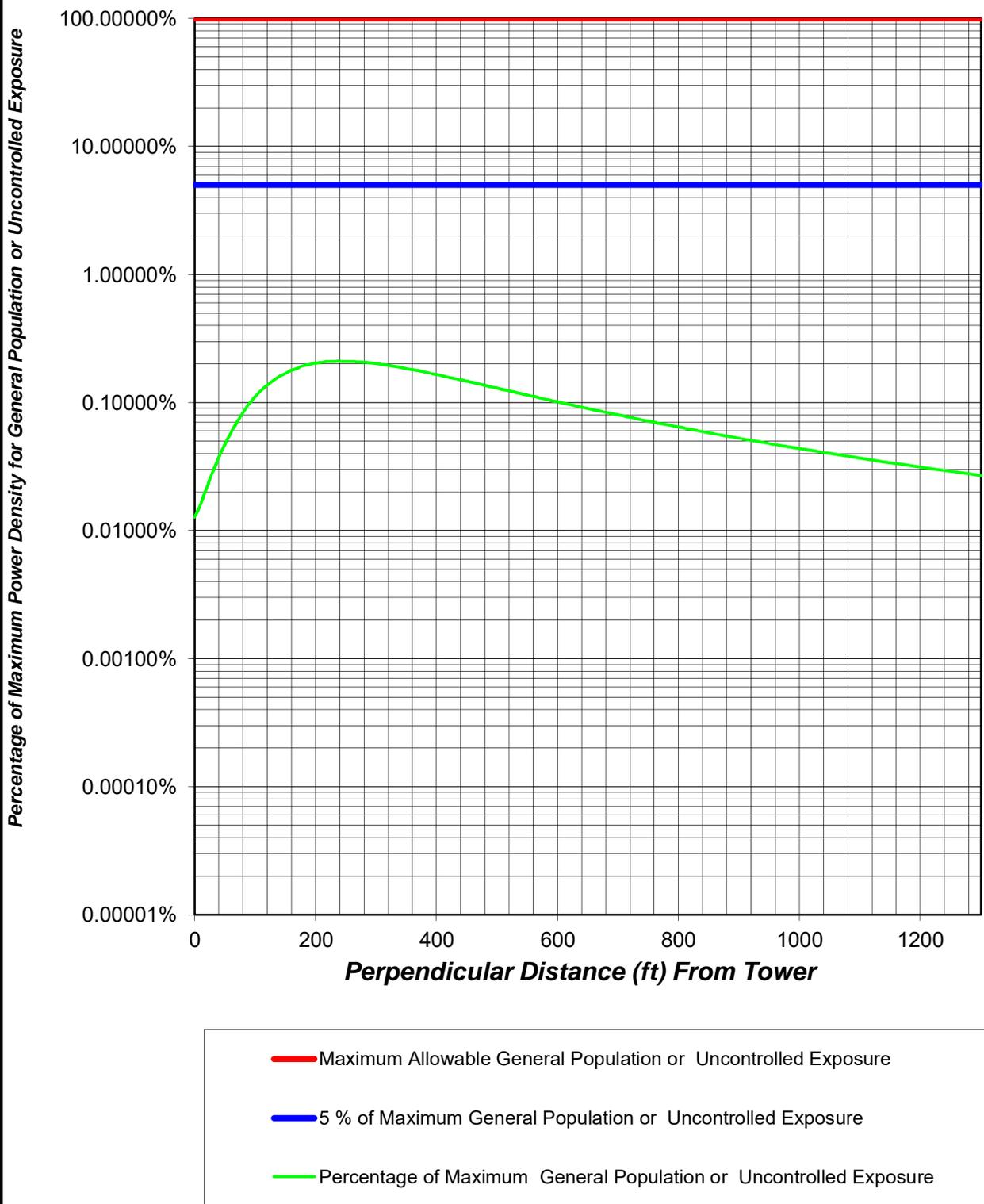
No Contour Overlap

**Construction Permitted Coverage**  
 Population Database: 2010 US Census (PL)  
 -----  
 Total Population Within Contour: 17,993  
 Total Area Within Contour: 2000.46 sq. km

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# FAR FIELD EXPOSURE TO RF EMISSIONS



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EXHIBIT 4.5