

WXGA-DT CHANNEL 9 MINOR  
MODIFICATION OF CONSTRUCTION  
PERMIT APPLICATION  
WAYCROSS, GEORGIA  
*(Georgia Public Telecommunications Commission)*

KESSLER AND GEHMAN ASSOCIATES, INC.  
TELECOMMUNICATIONS CONSULTING ENGINEERS

20070816

*Prepared by William T. Godfrey, Jr.*

KGGA

507 N.W. 60th Street, Suite C  
Gainesville, Florida 32607



***Kessler and Gehman Associates, Inc.***

Telecommunications Consulting Engineers

**ENGINEERING TECHNICAL STATEMENT PREPARED BY WILLIAM T. GODFREY, JR. OF THE FIRM KESSLER AND GEHMAN ASSOCIATES, INC., TELECOMMUNICATIONS CONSULTING ENGINEERS IN CONNECTION WITH A MINOR MODIFICATION OF CONSTRUCTION PERMIT APPLICATION TO MAKE CHANGES TO THE GEORGIA PUBLIC TELECOMMUNICATIONS COMMISSION (GPTC) DIGITAL BROADCAST FACILITY'S CONSTRUCTION PERMIT (BMPEDT-20020923ABU), WXGA-DT CHANNEL 9, WAYCROSS, GEORGIA.**

The firm Kessler and Gehman Associates, Inc. has been retained by the Georgia Public Telecommunications Commission (GPTC), Atlanta, GA to prepare engineering studies and the engineering portion of a minor modification of construction permit application requesting authorization to change antennas, change polarization, increase antenna height and decrease the effective radiated power (ERP) of the authorized WXGA-DT Channel 9 digital facility in order to facilitate construction of the WXGA-DT post-transition facility.

**Discussion**

GPTC is licensed to operate WXGA-TV (BLCT-1161) on NTSC Channel 8 with an ERP of 316 kW at an antenna height radiation center of 315 meters above ground level (AGL) using an RCA model TW-15 A8 top-mounted, omnidirectional, traveling wave antenna. WXGA-DT is currently authorized (BMPEDT-20020923ABU) to operate its pre-transition facility on Channel 9 with an ERP of 20 kW with an antenna height radiation center of 287 meters AGL. As requested, Channel 8 is assigned as the WXGA-DT post-transition channel for digital operation as adopted in the final DTV Table of Allotments (TOA). GPTC awarded an antenna contract to procure a Dielectric model TF-14HT-DC dual channel (N8/D9/D8), nondirectional antenna for the WXGA digital and analog facilities in order to combine the digital and analog signals.



GPTC proposes to modify the existing WXGA-DT Channel 9 construction permit by replacing the authorized side-mount, nondirectional, Dielectric model THV-13A9-R 04 single channel antenna with a new top-mounted, nondirectional, Dielectric model TF-14HT-DC dual-channel antenna. The antenna height radiation center as authorized in the WXGA-DT construction permit was based on a side-mount antenna height. Since this application proposes to mount a new dual channel antenna for its analog and digital operation at the top of the support structure, the height of the WXGA-DT antenna will increase by 21.8 meters.

Based on a structural analysis performed on June 8, 2007, multiple legs and diagonals on the WXGA support structure are overstressed; therefore the proposed dual channel antenna will completely eliminate the need for an additional antenna on the side of the tower which will significantly reduce the tower loading. Since the proposed antenna is a dual channel model, it will accommodate analog Channel 8 and digital Channel 9 throughout the DTV transition and then will allow GPTC to operate WXGA-DT on its digital Channel 8 post-transition channel after the transition. The change in antenna systems will result in an omni-for-omni swap and a slight decrease in ERP, from the authorized 20 kW to the proposed 16 kW, to compensate for the increased antenna height and maintain “freeze” compliance. Therefore, the proposed F(50,90) 36.0 dBuV/m noise limited contour will not exceed the authorized F(50,90) 36.0 dBuV/m noise limited contour in any azimuthal direction.

Accordingly, this minor modification of construction permit application requests FCC authorization to make the following changes: 1) change antenna system from the authorized Dielectric model THV-13A9-R 04 circularly polarized antenna to the proposed Dielectric model TF-14HT-DC horizontally polarized dual channel antenna; 2) increase the antenna height radiation center from the authorized side-mount height of 287.0 meters AGL to the proposed top-mount height of 308.8 meters AGL; and 3) decrease the ERP from the authorized 20 kW to the proposed 16 kW.



Exhibit 8 is an FCC coverage contour map depicting the authorized F(50,90) 36.0 dBuV/m protected noise limited contour (green contour) and the proposed F(50,90) 36.0 dBuV/m protected noise limited contour (dashed red contour). It can be seen that the proposed noise limited contour would be fully encompassed by the authorized noise limited contour in all azimuthal directions. Therefore, interference studies are not required.

Exhibit 9 is a principal community contour map demonstrating that the proposed WXGA-DT Channel 9 F(50,90) 43.0 dBuV/m Principal Community contour would completely encompass the principal community of Waycross, GA.

### **Interference Studies**

The proposed noise limited contour will be fully encompassed by the authorized noise limited contour in all azimuthal directions. Therefore, interference studies are not required.

### **Transmitter Site**

The proposed WXGA-DT antenna is a Dielectric model TF-14HT-DC top-mount, omnidirectional, dual channel, batwing antenna. The tower is registered with the FCC and the registration number is 1018780. The support structure is located at 6433 TV Tower Road, Millwood, GA. The proposed antenna height radiation center is 308.8 meters AGL (Exhibit 3).

### **Exhibits**

Exhibits 1 and 2 represent WXGA's administration data, antenna and antenna structure specifications.

Exhibit 3 depicts the profile view of the proposed antenna on the antenna structure with all the appropriate elevations.



Exhibits 4 (11 deg) and 5 (90 deg) display the elevation pattern and Exhibit 6 displays the elevation pattern tabulation.

Exhibit 7 depicts the location of the WXGA-DT site on a 7.5-Minute (Series) Topographic map.

Exhibit 8 depicts the WXGA-DT Channel 9 authorized and proposed noise limited contours and demonstrates that the proposed noise limited contour (red dashed contour) would be fully encompassed by the authorized noise limited contour (green contour) in all azimuthal directions.

Exhibit 9 depicts the proposed WXGA-DT F(50,90) 43.0 dBuV/m Principal Community contour, boundaries of the principal community to be served, and the transmitter location with radials every 45° and demonstrates that the principal community requirement would be satisfied by completely encompassing the entire city limits of Waycross, GA.

### **Environmental Impact**

The proposed construction would have no significant environmental impact as defined in §1.1307 of the FCC Rules. The digital transmitter, 3-inch (50-ohm) transmission line and antenna system shall produce an ERP of 16 kW. It was determined that the maximum lobe of radiation from the base of the tower would occur at approximately 581.5 feet from the base of the tower (1,163.0-foot radial distance from the antenna center). At approximately 581.5 feet from the base of the tower, the depression angle of the main lobe would be approximately 60° below the horizontal. At that point, the relative field is 0.199 and the power density six feet above the ground would be approximately 0.0002 mW/cm<sup>2</sup>. This would only be 0.017% of the maximum permissible exposure (MPE) limits for Occupational/Controlled Exposure and only 0.08% of the MPE limits for General Population/Uncontrolled Exposure authorized by the American National Standards Institute (ANSI).



Since operation of the proposed WXGA-DT Channel 9 facility would not exceed 5.0% of the MPE limit for Occupational/Controlled Exposure or General Population/Uncontrolled Exposure at any point on the ground, the proposed WXGA-DT facility would not be considered a “significant contributor” to the RF exposure environment pursuant to OET Bulletin 65, Edition 97-01. Therefore, contributions of exposure from other sources were not accounted for in this analysis. It is safe to conclude that the emissions would be insignificant and well within the maximum allowable requirements.

If other antennas are placed on the tower in the future, the applicant will cooperate with those users by reducing or completely terminating the power to the antenna when maintenance workers are in danger from electromagnetic radiation emanating from the antenna.

**Certification**

This technical statement was prepared by William T. Godfrey, Telecommunications Consultant with Kessler and Gehman Associates, Inc. having offices in Gainesville, Florida and has been working in the field of radio and television broadcast consulting since 1998. He graduated from the University of North Florida with a Bachelor of Arts degree in Criminal Justice and a minor in Mathematics in 1993. As a Professional in the field of Telecommunications he states under penalty of perjury that the information contained in this report is true and correct to the best of his knowledge and belief.



KESSLER AND GEHMAN ASSOCIATES, INC.

WILLIAM T. GODFREY, JR.  
Telecommunications Technical Consultant

16 August, 2007

**WXGA-DT CHANNEL 9**  
**WAYCROSS, GA**

**ENGINEERING SPECIFICATIONS**

**A. Transmitter Site:**

Geographic coordinates:

North Latitude .....	31° 13' 17"
West Longitude .....	82° 34' 24"

Transmitter Site Address: **6433 TV Tower Road**  
**Millwood, GA**

**B. Main Studio Site Address: 260 14<sup>th</sup> Street N.W., Atlanta, GA 30318.**

**C. Proposed Facility:**

DTV Channel	Number .....	9
	Frequency .....	186-192 MHz
	Offset .....	N/A

**D. Antenna Height:**

Height of Site Above Mean Sea Level (AMSL) .....	48.7 M
Overall Height of Structure Above Ground .....	323.0 M
(including all appurtenances)	
Overall Height of Structure Above Mean Sea Level .....	371.7 M
(including all appurtenances)	
Height of Site Above Average Terrain .....	-0.8 M
Antenna Height Radiation Center (R/C) Above Ground .....	308.8 M
Antenna Height R/C Above Mean Sea Level .....	357.5 M
Average of All Non-Odd Radials .....	49.5 M
Antenna Height R/C Above Average Terrain .....	308.0 M

**E. System Parameters – Horizontal Polarization:**

Transmitter Power Output .....	1.8 kW
Maximum Power Input to Antenna .....	1.1 kW
Total System Loss .....	2.06 dB
Transmission Line Efficiency .....	62.2%
Maximum Antenna Gain in Beam Maximum .....	11.58 dB
Maximum Antenna Gain in Horizontal Plane .....	10.90 dB
Maximum Effective Radiated Power .....	12.04 dBk
In Beam Maximum .....	16.0 kW
Maximum Effective Radiated Power .....	11.36 dBk
In Horizontal Plane .....	13.7 kW

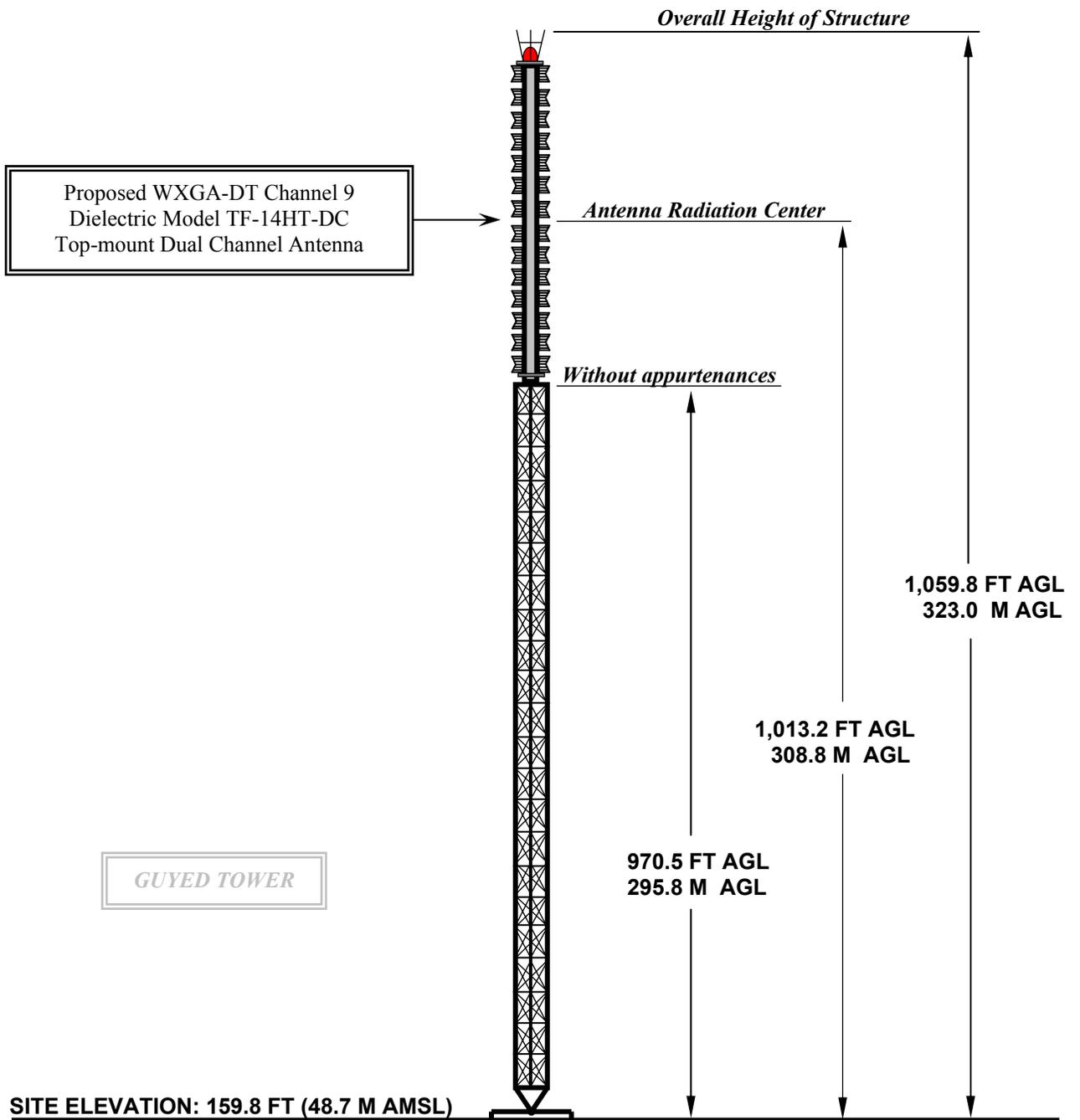
**WXGA-DT CHANNEL 9**  
*WAYCROSS, GA*

**DATA FOR PROPOSED NONDIRECTIONAL  
TRANSMITTING ANTENNA**

- A. **Antenna:** Dielectric Model TF-14HT-DC, Horizontally Polarized, Nondirectional, Top-mount, Dual Channel Antenna.
- B. **Electrical Beam Tilt:** 0.75 degrees
- C. **Mechanical Beam Tilt:** None
- D. 

<b><u>Maximum Power Gain</u></b>	<b><u>Horizontal Polarization</u></b>
Maximum:	14.4 (11.58 dB)
Horizontal:	12.3 (10.90 dB)
- E. **Length:** 85.3 feet (26.0 meters) not including appurtenances.
- F. **TPO:** 1.8 kW
- G. **Null Fill:** 9.7%
- H. **Transmission Line:** 3" 50 ohm Heliax®
- I. **Transmission Line Loss:** 0.202 dB/100-feet
- J. **Total Transmission Line:** 1,021 feet (1,003' V + 18' H)
- K. **Transmission Line Attenuation:** 2.06 dB

# PROPOSED WXGA-DT ELEVATION VIEW



**SITE ELEVATION: 159.8 FT (48.7 M AMSL)**

<b>OVERALL HEIGHT AGL:</b>	<b>323.0 M</b>
<b>OVERALL HEIGHT AMSL:</b>	<b>371.7 M</b>
<b>RADIATION CENTER AGL:</b>	<b>308.8 M</b>
<b>RADIATION CENTER AMSL:</b>	<b>357.5 M</b>
<b>RADIATION CENTER HAAT:</b>	<b>308.0 M</b>
<b>AVG OF ALL NON-ODD RADIALS:</b>	<b>49.5 M</b>
<b>SITE HAAT:</b>	<b>-0.8 M</b>

**COORDINATES (NAD 27):**

**N. LATITUDE 31° 13' 17"**  
**W. LONGITUDE 82° 34' 24"**

**Antenna Structure Registration Number:**  
**1018780**

**NOTE: NOT TO SCALE**

**KESSLER AND GEHMAN**

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**WXGA-DT CHANNEL 9**

**WAYCROSS, GEORGIA**

**20070816**

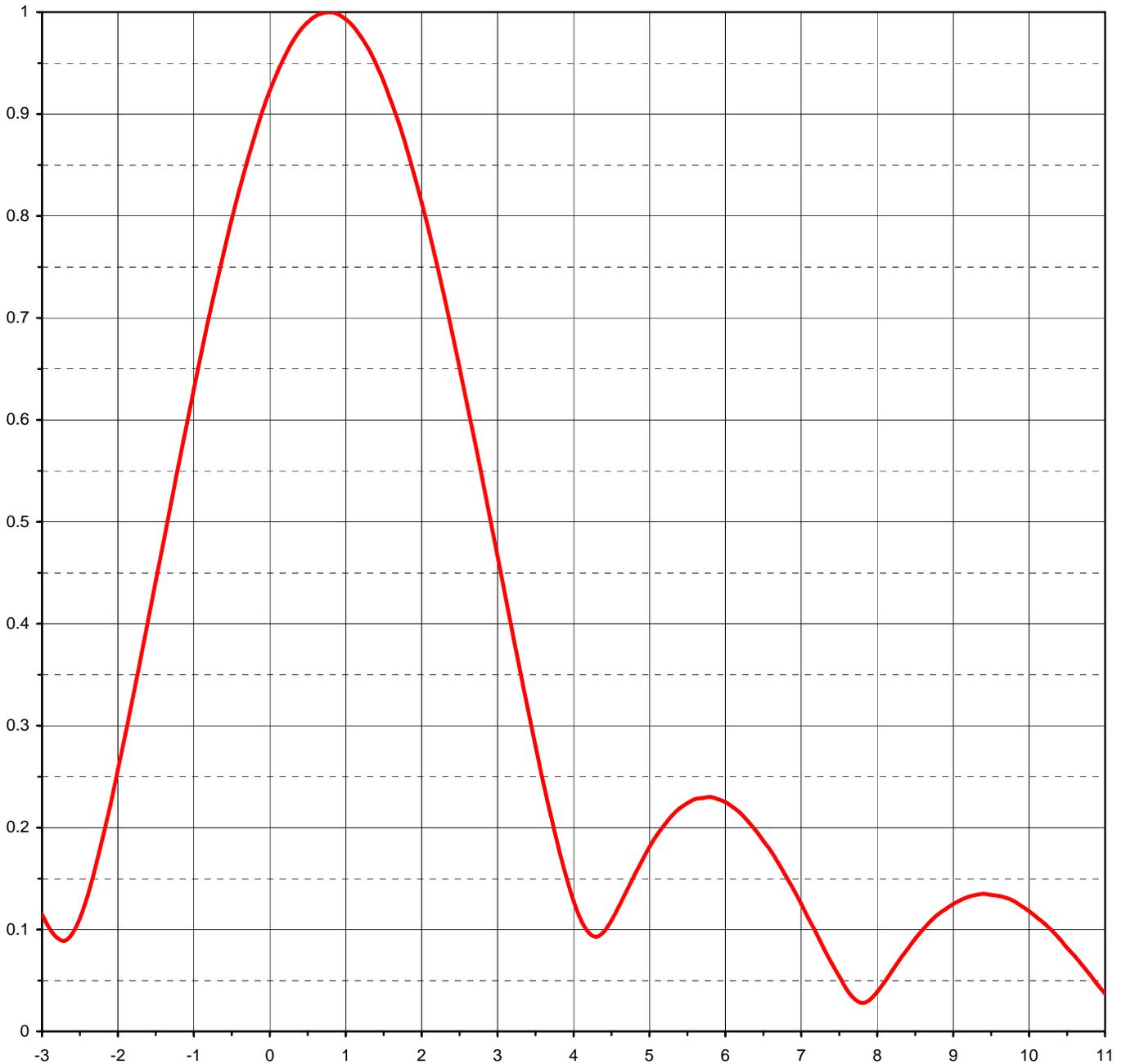
**EXHIBIT 3**



Proposal Number **C-00459**      Revision: **4**  
Date **11-Apr-07**  
Call Letters **WXGA-DT**      Channel **9**  
Location **Millwood, GA**  
Customer **GPTV**  
Antenna Type **TF-14HT-DC**

### ELEVATION PATTERN

RMS Gain at Main Lobe	<b>14.40 ( 11.58 dB )</b>	Beam Tilt	<b>0.75 deg</b>
RMS Gain at Horizontal	<b>12.30 ( 10.90 dB )</b>	Frequency	<b>189.00 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>14S144080</b>

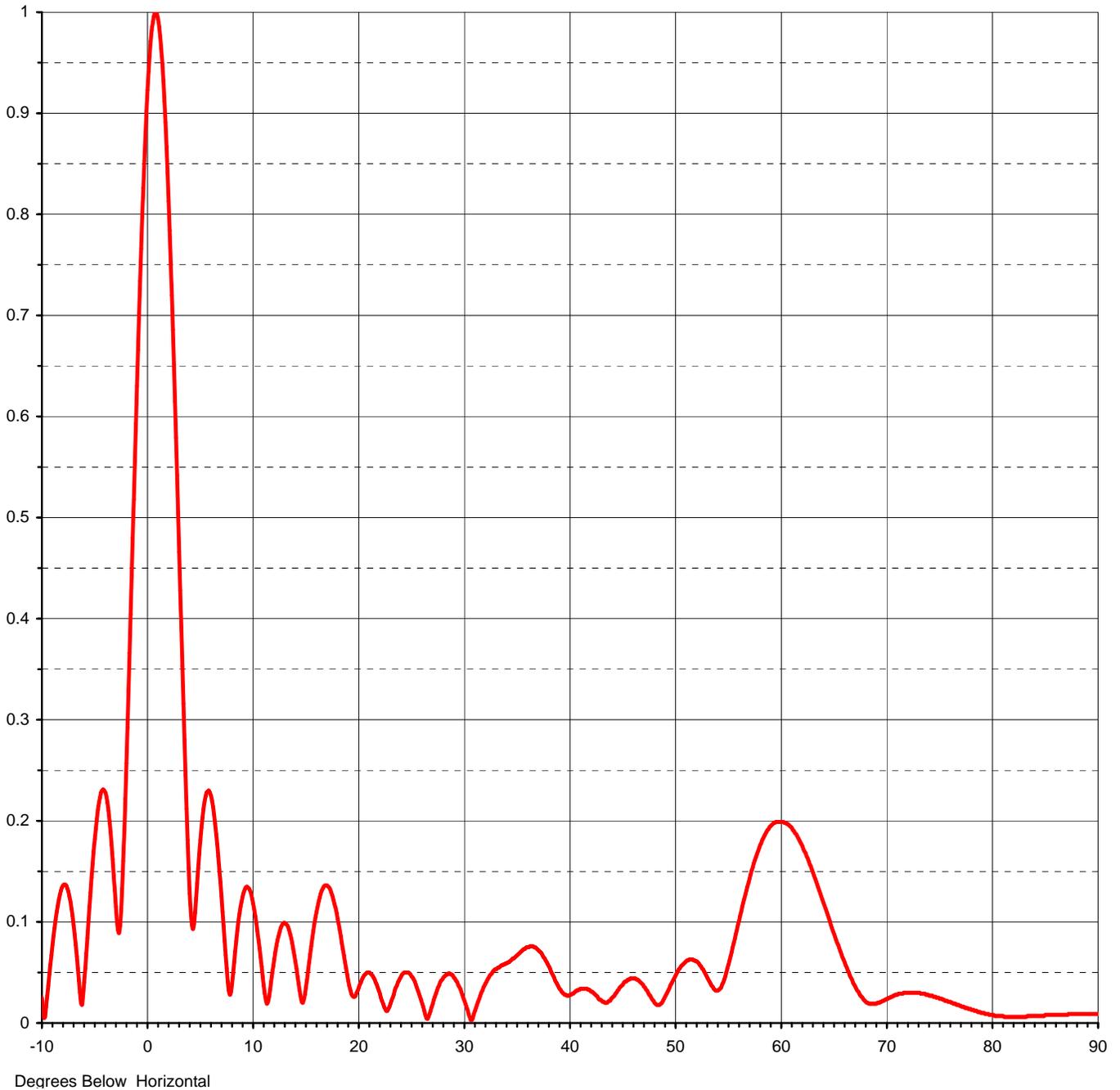




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RMS Gain at Horizontal	<b>12.30 ( 10.90 dB )</b>	Frequency	<b>189.00 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>14S144080-90</b>



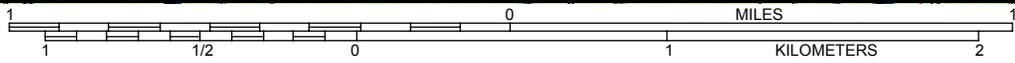
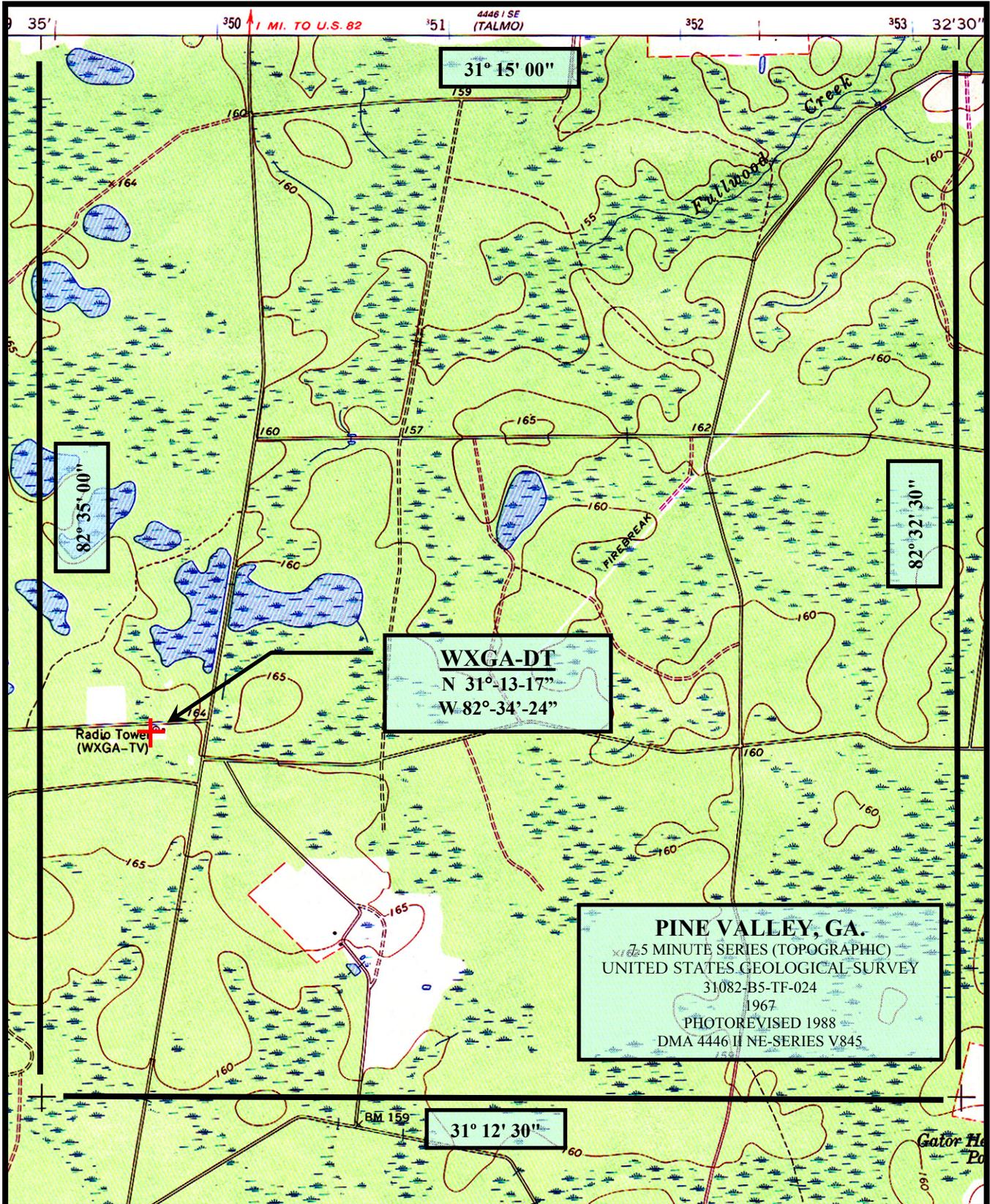


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## TABULATION OF ELEVATION PATTERN

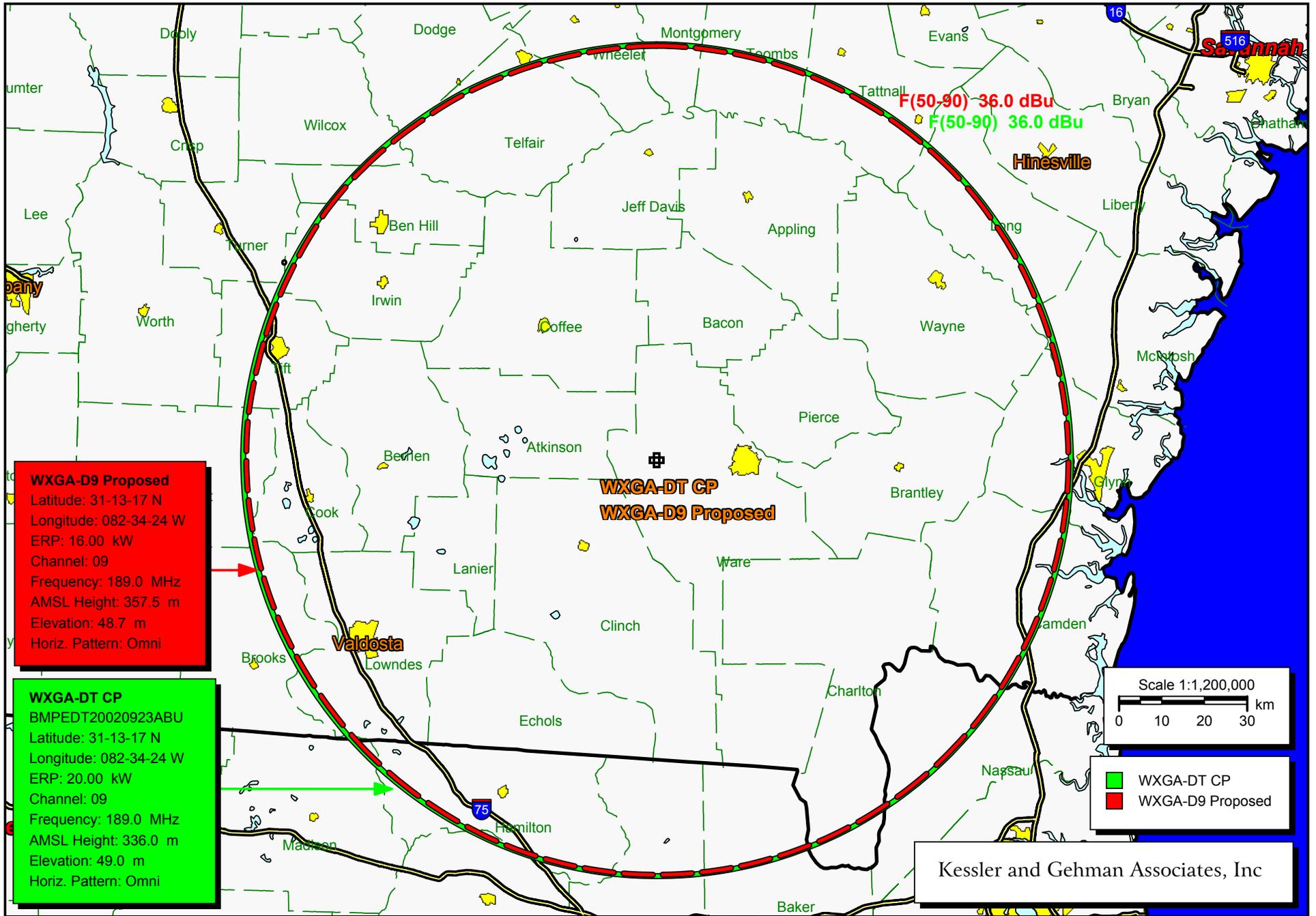
Elevation Pattern Drawing #: **14S144080-90**

Angle	Field										
-10.0	0.025	2.4	0.686	10.6	0.082	30.5	0.009	51.0	0.060	71.5	0.029
-9.5	0.027	2.6	0.615	10.8	0.065	31.0	0.009	51.5	0.063	72.0	0.030
-9.0	0.077	2.8	0.542	11.0	0.046	31.5	0.024	52.0	0.061	72.5	0.030
-8.5	0.116	3.0	0.466	11.5	0.021	32.0	0.037	52.5	0.056	73.0	0.030
-8.0	0.136	3.2	0.390	12.0	0.056	32.5	0.047	53.0	0.047	73.5	0.029
-7.5	0.130	3.4	0.316	12.5	0.086	33.0	0.053	53.5	0.037	74.0	0.027
-7.0	0.097	3.6	0.245	13.0	0.099	33.5	0.056	54.0	0.032	74.5	0.026
-6.5	0.042	3.8	0.181	13.5	0.092	34.0	0.059	54.5	0.038	75.0	0.024
-6.0	0.040	4.0	0.128	14.0	0.067	34.5	0.062	55.0	0.054	75.5	0.022
-5.5	0.115	4.2	0.097	14.5	0.032	35.0	0.066	55.5	0.075	76.0	0.021
-5.0	0.182	4.4	0.098	15.0	0.028	35.5	0.071	56.0	0.097	76.5	0.019
-4.5	0.223	4.6	0.123	15.5	0.068	36.0	0.075	56.5	0.119	77.0	0.017
-4.0	0.228	4.8	0.153	16.0	0.104	36.5	0.076	57.0	0.139	77.5	0.015
-3.5	0.189	5.0	0.181	16.5	0.128	37.0	0.073	57.5	0.158	78.0	0.013
-3.0	0.115	5.2	0.203	17.0	0.136	37.5	0.067	58.0	0.173	78.5	0.012
-2.8	0.092	5.4	0.219	17.5	0.129	38.0	0.058	58.5	0.185	79.0	0.010
-2.6	0.096	5.6	0.228	18.0	0.109	38.5	0.047	59.0	0.194	79.5	0.009
-2.4	0.133	5.8	0.230	18.5	0.079	39.0	0.036	59.5	0.198	80.0	0.008
-2.2	0.190	6.0	0.225	19.0	0.048	39.5	0.029	60.0	0.199	80.5	0.007
-2.0	0.257	6.2	0.214	19.5	0.027	40.0	0.027	60.5	0.198	81.0	0.007
-1.8	0.329	6.4	0.197	20.0	0.032	40.5	0.030	61.0	0.194	81.5	0.006
-1.6	0.404	6.6	0.177	20.5	0.045	41.0	0.033	61.5	0.187	82.0	0.006
-1.4	0.480	6.8	0.152	21.0	0.050	41.5	0.034	62.0	0.177	82.5	0.006
-1.2	0.556	7.0	0.125	21.5	0.045	42.0	0.032	62.5	0.165	83.0	0.006
-1.0	0.630	7.2	0.096	22.0	0.032	42.5	0.028	63.0	0.152	83.5	0.007
-0.8	0.701	7.4	0.067	22.5	0.016	43.0	0.023	63.5	0.137	84.0	0.007
-0.6	0.766	7.6	0.041	23.0	0.016	43.5	0.020	64.0	0.122	84.5	0.007
-0.4	0.826	7.8	0.028	23.5	0.032	44.0	0.024	64.5	0.104	85.0	0.008
-0.2	0.878	8.0	0.039	24.0	0.044	44.5	0.030	65.0	0.088	85.5	0.008
0.0	0.923	8.2	0.060	24.5	0.050	45.0	0.037	65.5	0.074	86.0	0.008
0.2	0.957	8.4	0.081	25.0	0.048	45.5	0.042	66.0	0.060	86.5	0.008
0.4	0.982	8.6	0.100	25.5	0.038	46.0	0.044	66.5	0.047	87.0	0.008
0.6	0.996	8.8	0.115	26.0	0.023	46.5	0.043	67.0	0.036	87.5	0.009
0.8	1.000	9.0	0.125	26.5	0.005	47.0	0.038	67.5	0.027	88.0	0.009
1.0	0.993	9.2	0.132	27.0	0.016	47.5	0.030	68.0	0.021	88.5	0.009
1.2	0.976	9.4	0.135	27.5	0.032	48.0	0.022	68.5	0.019	89.0	0.009
1.4	0.949	9.6	0.133	28.0	0.043	48.5	0.018	69.0	0.019	89.5	0.009
1.6	0.912	9.8	0.131	28.5	0.048	49.0	0.024	69.5	0.021	90.0	0.009
1.8	0.867	10.0	0.123	29.0	0.047	49.5	0.034	70.0	0.024		
2.0	0.813	10.2	0.112	29.5	0.038	50.0	0.045	70.5	0.026		
2.2	0.753	10.4	0.099	30.0	0.025	50.5	0.054	71.0	0.028		

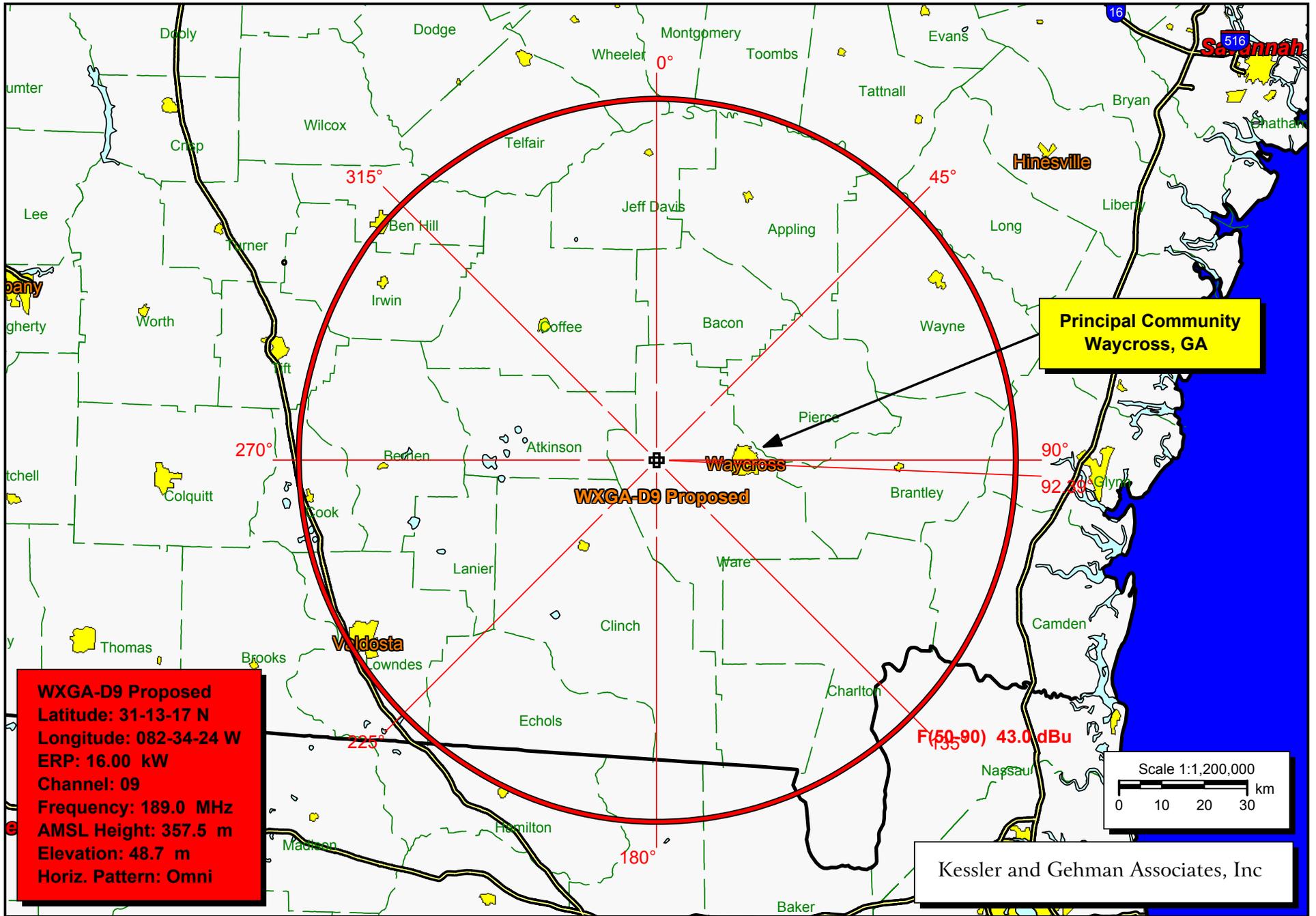


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**WXGA-DT CHANNEL 9**  
**WAYCROSS, GEORGIA**  
20070816 EXHIBIT 7



WXGA-DT (CP) vs. WXGA-DT (Proposed)



Proposed WXGA-DT F(50,90) 43.0 dBuV/m Principal Community Contour