

Charlotte, North Carolina  
Amendment to  
Long Form Application for New FM Translator  
BNPFT-20130326AGF  
On Channel 268  
by  
Isothermal Community College

Exhibit 13  
Interference Analysis

March 2013

© 2013 Isothermal Community College

Timothy L. Warner, Inc.  
Post Office Box 8045  
Asheville, North Carolina 28814-8045  
(828) 258-1238  
twarner@tlwinc.net

## Table of Contents

Description	Page
Declaration .....	2
Narrative.....	3
Allocations .....	4
Table 1: Allocations .....	5
Table 2: Facilities Protected by U/D Method.....	6
Undesired to Desired Method.....	6
Source of Data.....	8
Tech Box and Proposed Contours.....	Figure 1
Vertical Plot of 112.6 dBu Contour .....	Figure 2
Aerial Photograph of Transmitter Site .....	Figure 3
Topographic Map of Transmitter Site .....	Figure 4

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 Exhibit 13, Interference Analysis, for Isothermal Community College, 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.



---

Timothy L. Warner, P.E.  
Post Office Box 8045  
Asheville, North Carolina 28801  
(828) 258-1238  
[twarner@tlwinc.net](mailto:twarner@tlwinc.net)  
29 March 2013

Narrative

This Exhibit supports an amendment to a long form application file number BNPFT-20130326AGF. The only technical item changed is the effective radiated power, increased from 10 Watts to 19 Watts, to match the ERP used in the preclusion study and in the graphical allocation study. This exhibit adds additional support text describing the U/D study, and Figures 2, 3 and 4. Table 1: Allocations is updated to include the long form application. The remainder of the text remains the same.

This Exhibit supports a long form application in response to a filing window<sup>1</sup> for FM translator file number BNPFT-20030317IFV, CDBS application ID 649890, on Channel 268 in Charlotte, North Carolina. Allocation details are provided in this exhibit. The application proposes minor modification changes from the tech box filing. Specific changes are a change of site, a change to a first adjacent frequency, a decrease in height, and an increase in power.

This proposal creates no new mutual exclusivities with any Auction 83 Tech Box filings.

Figure 1 shows the tech box 60 dBu F(50,50) coverage area, and the proposed 60 dBu F(50,50) coverage area. This application proposed a minor modification of the Tech Box facilities.

---

<sup>1</sup> *Public Notice, Media Bureau Announces FM Translator Auction 83 Filing Window and Filing Procedures*, DA13-283, released February 26, 2013. (Singleton Notice)

Allocations

This application proposes service to Charlotte, North Carolina, on channel 268. An updated Table 1: Allocations is included in this exhibit with a list of the stations, construction permits, allocations, and applications studied. All are protected by this application.

Table 1: Allocations

Allocation Study												
Isothermal Community College												
REFERENCE	CH# 268D - 101.5 MHz, Pwr= 0.019 kW, HAAT= 0.0 M, COR= 295 M										DISPLAY DATES	
35 10 51.0 N.	Average Protected F(50-50)= 3.7 km										DATA	03-29-13
80 46 32.0 W.	Omni-directional										SEARCH	03-29-13
CH CITY	CALL	TYPE	ANT STATE	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*	
270C0 Gastonia	WBAV-FM	LIC	CY NC	277.3 97.1	45.96 BLH19880129KD	35 13 57.0 81 16 35.0	100.000 301	10.5 552	74.0 Cbs Radio Stations Inc.	29.1	-28.3*	
Protected by U/D ratio, see text and figures.												
268D Charlotte	1547571	APP	C NC	0.0 0.0	0.00 BNPFT20130326AGF	35 10 51.0 80 46 32.0	0.010	15.5 295	4.9 Isothermal Community College	-21.2*	-23.6*	
Long form application which this application amends.												
265A Indian Trail	WQNC	LIC	CX NC	143.6 323.6	7.74 BLH20080611ABB	35 07 29.0 80 43 30.0	5.200 107	2.5 305	25.9 Radio One Of North Carolina	-0.8	-18.5*	
Protected by U/D ratio, see text and figures.												
267D Charlotte	649890	APP	C NC	45.8 225.9	11.25 BNPFT20030317IHB	35 15 05.0 80 41 12.0	0.010 161	9.6 360	6.8 Isothermal Community College	-4.5	-4.3	
Tech Box application for which this is an amended long form application.												
268C Raleigh	WRAL	LIC	C NC	74.2 255.5	210.71 BMLH20040903ABQ	35 40 35.0 78 32 08.0	100.000 555	194.2 646	89.5 Wral-fm, Inc.	10.5	102.1	
268C Johnson City	WQUT	LIC	CY TN	311.0 130.1	185.95 BMLH19980904KD	36 16 07.0 82 20 21.0	100.000 457	167.6 1069	68.1 Radio License Holding Cbc,	12.8	95.2	
267C Sumter	WWDW	LIC	DEN SC	176.1 356.1	125.61 BMLH19980925KB	34 03 04.0 80 40 55.0	100.000 403	106.1 471	72.1 Ymf Media South Carolina L	12.8	44.1	
268D Mooresville	634615	APP	C NC	354.2 174.2	47.65 BNPFT20030312ALM	35 36 29.5 80 49 43.3	0.010 176	27.0 424	8.0 Triad Family Network, Inc	15.0	22.0	
267D Salisbury	W267AG	LIC	CN NC	27.0 207.2	60.69 BLFT19951102TX	35 40 03.0 80 28 13.0	0.038 58	6.3 279	4.4 Triad Family Network, Inco	48.5	48.2	
Translator for WBFI(FM), Winston-Salem, NC												
267D Mocksville	W267AM	LIC	C NC	15.2 195.4	80.50 BLFT20091201ARG	35 52 50.0 80 32 26.0	0.033 38	6.6 262	4.7 Triad Family Network, Inc.	67.8	67.4	
271C0 Reidsville	WJMH	LIC	C NC	31.5 212.0	143.06 BMLH20010731ACA	36 16 33.0 79 56 26.0	100.000 367	10.5 600	74.1 Entercom Greensboro Licens	126.6	68.8	
265D Hickory	651518	APP	C NC	326.5 146.2	78.61 BNPFT20030317MAH	35 46 11.0 81 15 26.0	0.019 79	0.3 394	6.7 Conner Media Corporation	72.5	71.3	
266C0 Burlington	WYMY	LIC	CX NC	54.7 235.5	147.21 BLH20100708MZY	35 56 15.0 79 26 30.0	100.000 359	10.5 551	74.1 Carolina Radio Group, Inc.	130.5	73.0	
265D Hickory	640588	APP	C NC	319.8 139.4	81.93 BNPFT20030317BGV	35 44 32.0 81 21 43.0	0.055 31	0.5 352	6.8 Radio Training Network, In	75.5	74.0	
Terrain database is NED 03 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= East Zone, Co to 3rd adjacent.												
All separation margins (if shown) include rounding												
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)												
"*"affixed to 'IN' or 'OUT' values = site inside protected contour.												

**Table 2: Facilities Protected by U/D Method**

Facility	WBAV-FM Gastonia, North Carolina	WQNC Indian Trail, North Carolina
Relationship	270C0, second adjacent	265A, third adjacent
Distance (km)	45.96	7.74
Bearing (degrees)	277.3	143.6
ERP (kW, on azimuth)	100	5.2
HAAT (m, on azimuth)	321.2	88.7
Ratio	40	40
Signal Strength (dBu)	70.6	81.0
Translator Signal Strength	112.6	121.0
Translator distance (km)	.072	.027

**Undesired to Desired Method**

Protection to some facilities is provided through the use of Undesired to Desired Signal Strength Ratio (U/D) calculations. Table 2 lists the parameters studied. The WBAV-FM field strength calculated at ground level at the proposed 649890 site is 70.6dBu, using the FM Curves calculator on the FCC web site. For the translator interference contour, free space calculations are used. The corresponding 112.6 dBu field strength distance is .072 kilometers in the horizontal plane. Because the radiation center is 79 meters above ground, the interference level signal will not reach any populated area.

The WQNC field strength calculated at ground level at the proposed 649890 site is 81.0 dBu, using the FM Curves calculator on the FCC web site. For the translator interference contour, free space calculations are used. The corresponding 121.0 dBu field strength distance is .027 kilometers in the horizontal plane. Because the radiation center is 79 meters above ground, the interference level signal will not reach any populated area.

[Amendment additional text] Figure 2 provides a plot in the vertical plane when the elevation pattern of the proposed Shively 6812B-1 antenna is considered. As shown, the proposed 112.6 dBu contour remains at least 42 meters above ground. The 121.0 dBu contour would be even farther off the ground.

Figure 3 is an aerial photograph of the proposed transmitter site. Lines indicate the approximate extent of the 112.6 dBu contour in the horizontal plane. There are no structures over two stories (assumed 10 meters, 32.8 feet) tall in the vicinity of the transmitter site. Figure 4 is a topographic map of the transmitter site. The site is on generally level land. The same 75 meter lines are shown. There are no occupied structures which could receive the 112.6 dBu signal level. [end amendment text]

Because the interference contour does not reach the ground, there is no population within the predicted interference area and therefore this facility is permitted under §74.1204(d).

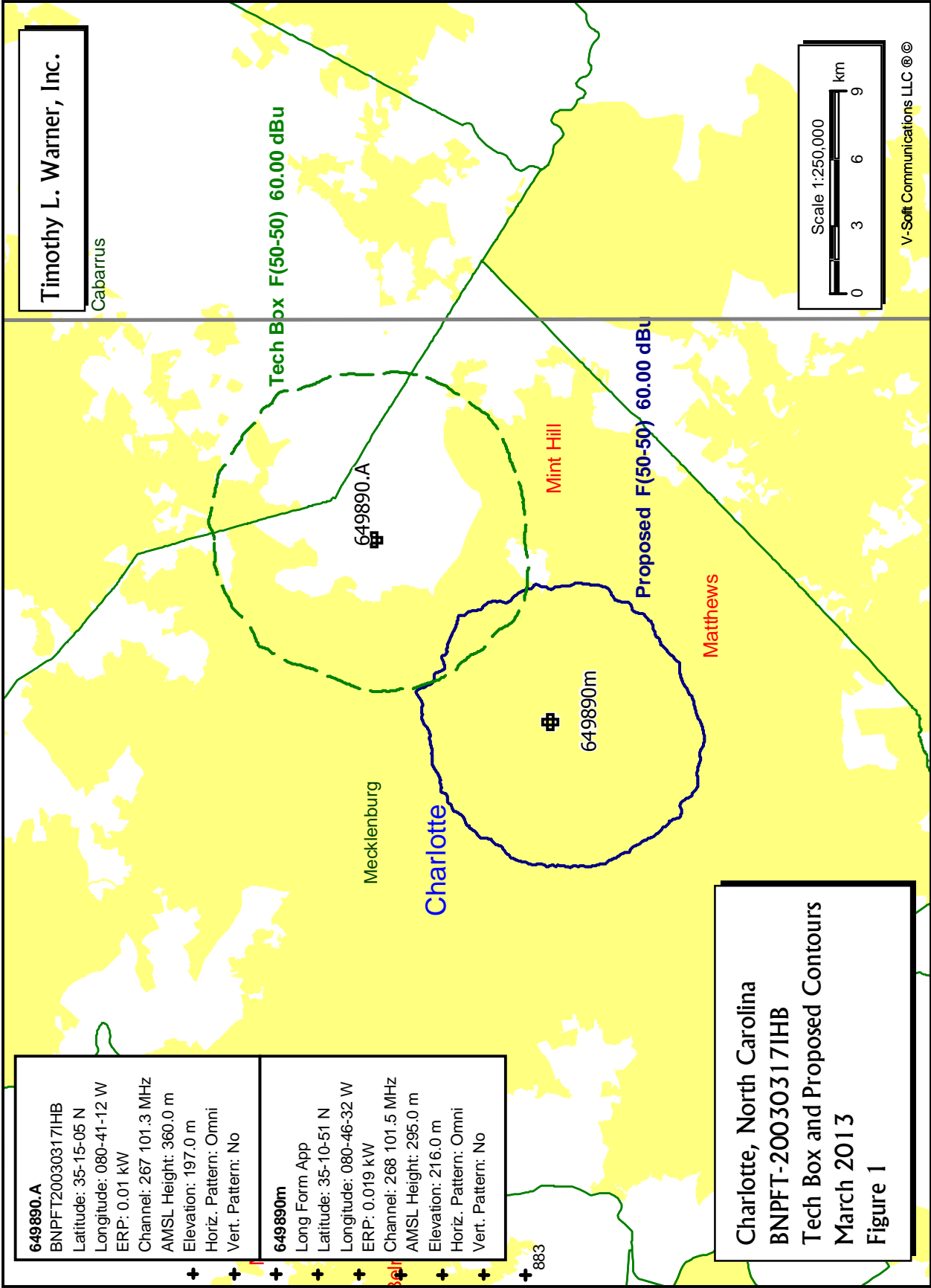
The applicant recognizes that the U/D method is only a tool for predicting likely interference. Should any actual interference be experienced, the applicant will cooperate fully in correcting the interference. Corrective steps may require changes in the transmitting antenna or other steps which would require Commission authorization, may require that the translator cease operation except for brief equipment tests, or may require filtering at the receivers which report interference.

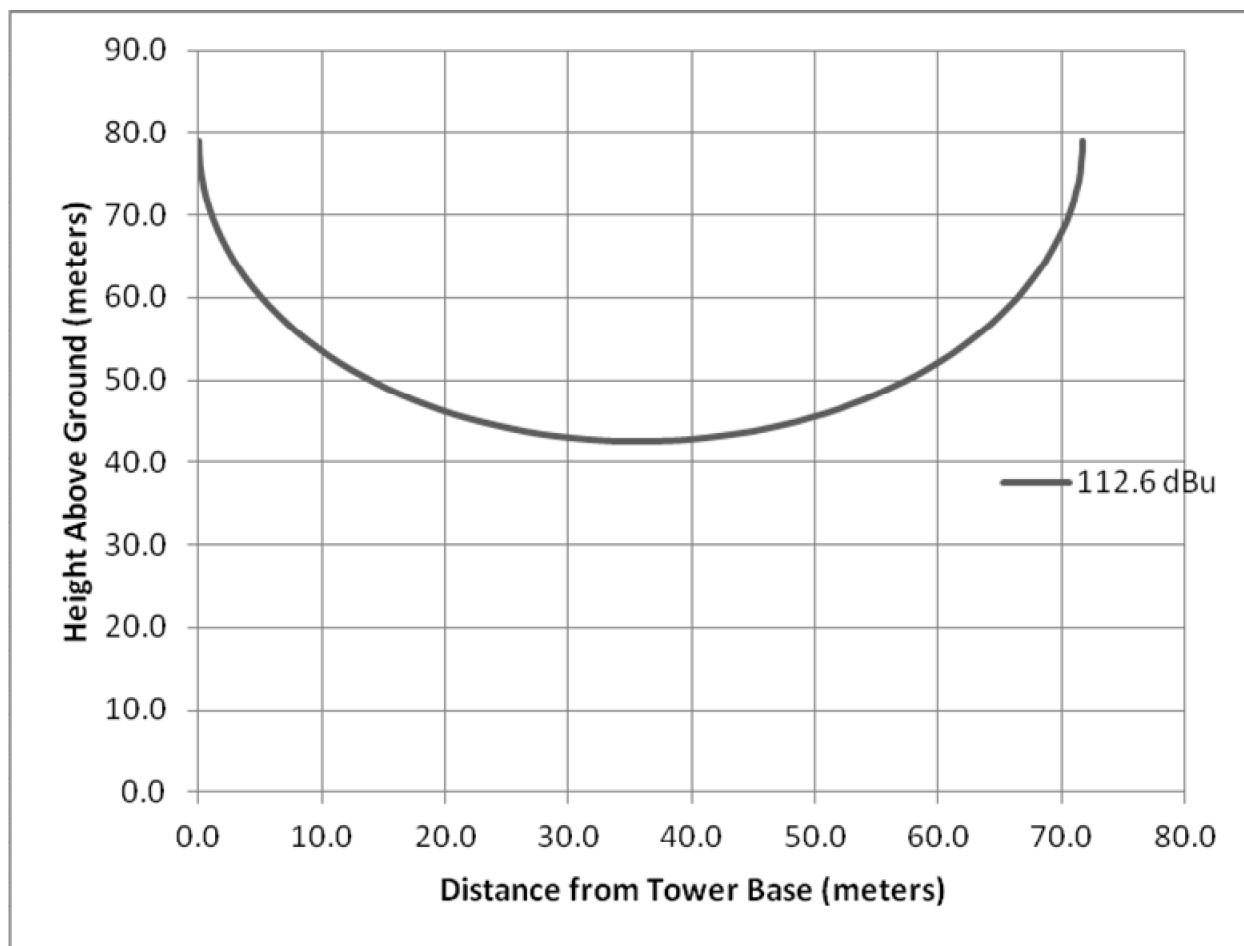


Source of Data

Transmitter location, effective radiated power, directional antenna pattern, and elevation data are extracted from the Commission's CDBS. All contours for existing and proposed facilities are calculated using height above average terrain calculated at one degree horizontal increments.

The contours were also evaluated using terrain extracted from the V-Soft Communications NED 03 terrain database. The NED 03 database is derived from the USGS National Elevation Data 30 meter terrain database.



Vertical Plot of 112.6 dBu Contour

Free space propagation  
Shively 6812B-1 antenna  
Center of Radiation 79 meters Above Ground Level  
ERP 19 Watts

35°11'

35°10'55"

35°10'50"

35°10'45"

35°10'40"

35°11'

35°10'55"

35°10'50"

35°10'45"

35°10'40"

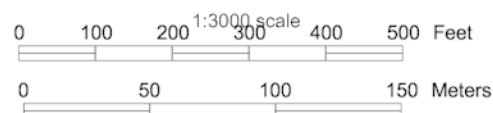
80°46'40"

80°46'35"

80°46'30"

80°46'25"

Universal Transverse Mercator (UTM) Projection Zone 17  
North American Datum of 1983



Magnetic declination of 7W at center of map  
on March 17, 2011

Figure 3





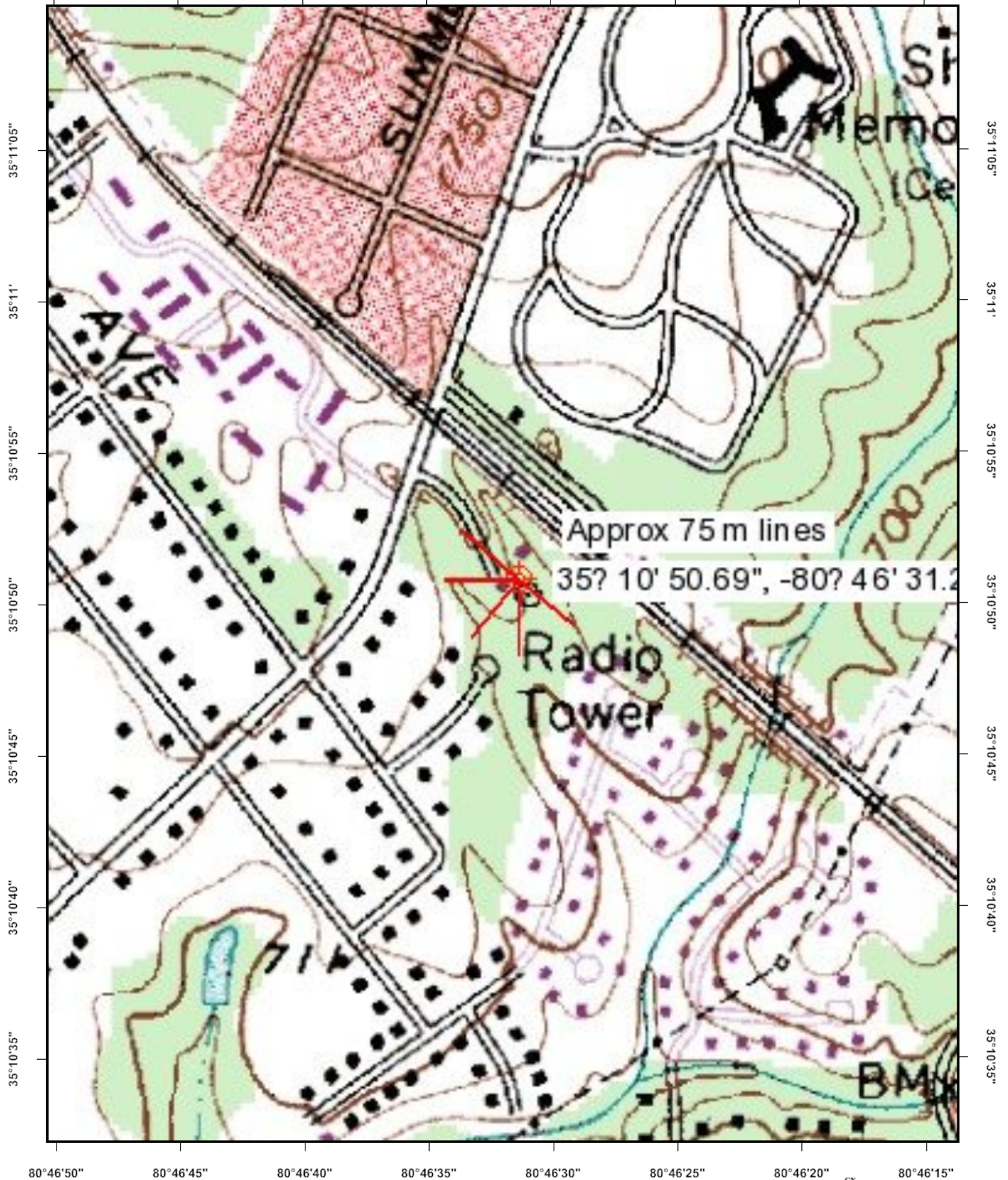


Figure 4