

## **ENGINEERING EXHIBIT**

### **Incentive Auction Channel Reassignment**

#### **Application for Modification of Digital Television Station Construction Permit** prepared for

##### **Mississippi TV License Company, LLC**

WTVA(DT) Tupelo, MS  
Facility ID 74148  
Ch. 11 42.1 kW 541 m

*Mississippi TV License Company, LLC* (“*MTLC*”) is the licensee of digital television station WTVA(DT), Channel 8, Facility ID 74148, Tupelo, MS. Reassignment of WTVA from Channel 8 to Channel 11 was specified in the *Incentive Auction Closing and Channel Reassignment Public Notice* (“*CCRPN*”, DA 17-317, released April 13, 2017). *MTLC* herein proposes modification of the WTVA post-auction Channel 11 Construction Permit (“CP” file# 0000027684). This application is intended to be filed during the second filing window.<sup>1</sup> The CP authorizes operation at 18.2 kW effective radiated power (“ERP”) at 541 meters antenna height above average terrain. *MTLC* proposes herein to increase the ERP to 42.1 kW.

As with the current authorization, the proposed Channel 11 operation will employ a new antenna system to be top-mounted on the WTVA tower in lieu of the existing Channel 8 antenna. The existing tower structure corresponds to FCC Antenna Structure Registration number 1040183. No change to the overall structure height will result. The proposed antenna is a horizontally polarized nondirectional ERI model ATW9V3-HTO-11H.

Figure 1 supplies a map that demonstrates compliance with §73.625(a)(1) regarding coverage of the entire principal community. The proposed facility’s predicted population exceeds 95 percent of the *CCRPN* baseline facility’s population.

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<sup>1</sup>Public Notice “*Incentive Auction Task Force and Media Bureau Announce the Opening of the Second Filing Window for Eligible Full Power and Class A Television Station—October 3 Through November 2, 2017*” DA 17-911, released September 20, 2017.

Interference study per FCC OET Bulletin 69<sup>2</sup> shows that the proposal complies with the 0.5 percent limit of new interference caused to pertinent nearby post-auction full service and Class A television stations and reassignments as required by §73.616. The interference study output report is provided as Table 1.

The nearest FCC monitoring station is 404 km distant at Powder Springs, GA. This exceeds by a large margin the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with “quiet” zones specified in §73.1030(a) and (b). There are no authorized AM stations within 3 kilometers of the site. The site location is beyond the border areas requiring international coordination.

### **Human Exposure to Radiofrequency Electromagnetic Field**

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the FCC’s OET Bulletin Number 65. Based on OET-65 equation (10), and considering the worst-case of 100 percent antenna relative field in downward elevations, the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is  $6.5 \mu\text{W}/\text{cm}^2$ , which is 3.3 percent of the general population/uncontrolled maximum permitted exposure limit. This is below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal’s contribution is less than five percent. When the antenna’s elevation pattern is considered, the calculated signal density will be even lower.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC’s guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and

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<sup>2</sup>FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 (“OET-69”). This analysis employed the FCC’s current “TVStudy” software with the default application processing template settings, 2 km cell size, and 1 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCC’s implementation of TVStudy show excellent correlation.

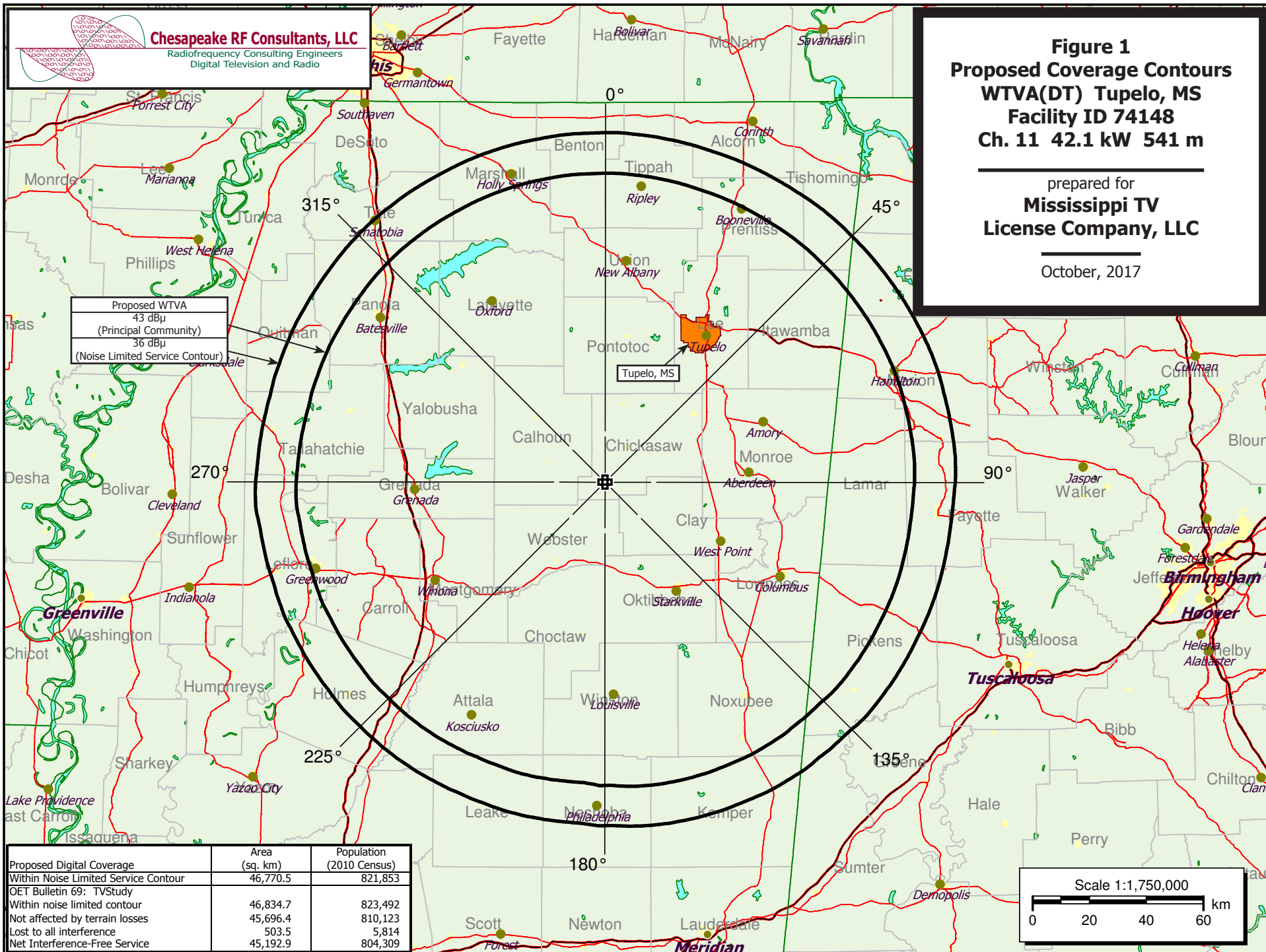
will reduce power or cease operation as necessary to protect persons having access to the site, tower, or antenna from RF electromagnetic field exposure in excess of FCC guidelines. This exhibit is limited to the evaluation of exposure to RF electromagnetic field. No increase in structure height is proposed.

*List of Attachments*

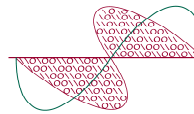
Figure 1	Proposed Coverage Contours
Table 1	OET Bulletin 69 Interference Study
Form 2100	Saved Version of Engineering Sections from FCC Form at Time of Upload

**Chesapeake RF Consultants, LLC**

Joseph M. Davis, P.E.	October 28, 2017	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600



**Table 1 WTVA(DT) OET Bulletin 69 Interference Study**  
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**Chesapeake RF Consultants, LLC**  
Radiofrequency Consulting Engineers  
Digital Television and Radio

tvstudy v2.2.3 (6K70F1)  
Database: localhost, Study: WTVA 42.1kW Prop, Model: Longley-Rice  
Start: 2017.10.28 15:40:29

Study created: 2017.10.28 15:39:49

Study build station data: LMS TV 2017-10-07 LMSTV

Proposal: WTVA D11 DT APP TUPELO, MS  
File number: WTVA 42.1kW Prop  
Facility ID: 74148  
Station data: User record  
Record ID: 1435  
Country: U.S.  
Zone: II

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	WBIQ	D10	DT	LIC	BIRMINGHAM, AL	BLEDT20140612ABA	213.8 km
Yes	WTZT-CD	D11	DC	APP	ATHENS, AL	BPDVA20130508AIV	257.0
Yes	WTZT-CD	D11	DC	LIC	ATHENS, AL	BLDVA20120221ABI	243.9
No	WTVM	D11	DT	LIC	COLUMBUS, GA	BLCDT20131113BGN	432.4
Yes	KMLU	D11	DT	LIC	COLUMBIA, LA	BLCDT20121106AAT	329.9
No	WYES-TV	D11	DT	LIC	NEW ORLEANS, LA	BLEDT20090818AAE	434.6
No	KFVS-TV	D11	DT	CP	CAPE GIRARDEAU, MO	BLANK0000025084	405.8
No	WETV-CD	D11+	DC	LIC	MURFREESBORO, TN	BLANK0000004987	335.1
No	WJTV	D12	DT	LIC	JACKSON, MS	BLCDT20111014ABR	211.8

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D11  
Latitude: 33 47 40.00 N (NAD83)  
Longitude: 89 5 16.00 W  
Height AMSL: 642.9 m  
HAAT: 540.9 m  
Peak ERP: 42.1 kW  
Antenna: Omnidirectional  
Elev Pattn: Generic  
Elec Tilt: 0.75

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	42.1 kW	548.4 m	122.6 km
45.0	42.1	543.1	122.2
90.0	42.1	551.2	122.8
135.0	42.1	545.4	122.4
180.0	42.1	514.6	120.5
225.0	42.1	528.5	121.3
270.0	42.1	547.7	122.6
315.0	42.1	548.2	122.6

\*\*Proposal service area extends beyond baseline plus 1.0%  
Proposal service area population is more than 95.0% of baseline

Distance to Canadian border: 1040.3 km

Distance to Mexican border: 1150.5 km

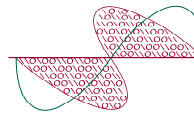
Conditions at FCC monitoring station: Powder Springs GA  
Bearing: 87.7 degrees Distance: 403.0 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 300.8 degrees Distance: 1593.1 km

Study cell size: 2.00 km

**Table 1 WTVA(DT) OET Bulletin 69 Interference Study**  
(page 2 of 3)



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Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%

Maximum new IX to LPTV: 2.00%

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Interference to BPDVA20130508AIV APP, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WTZT-CD	D11	DC	APP	ATHENS, AL	BPDVA20130508AIV	
Undesireds:	WTVA	D11	DT	BL	TUPELO, MS	DTVBL74148	257.0 km
	WTVA	D11	DT	APP	TUPELO, MS	WTVA 42.1kW Prop	257.0
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
13354.8 762,027		12369.1 735,126		12369.1 735,126		12361.2 734,975	0.06 0.02
Undesired		Total IX		Unique IX, before		Unique IX, after	
WTVA D11 DT BL		0.0 0		0.0 0			
WTVA D11 DT APP		7.9 151				7.9 151	

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Interference to BLDVA20120221ABI LIC, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WTZT-CD	D11	DC	LIC	ATHENS, AL	BLDVA20120221ABI	
Undesireds:	WTVA	D11	DT	BL	TUPELO, MS	DTVBL74148	243.9 km
	WTVA	D11	DT	APP	TUPELO, MS	WTVA 42.1kW Prop	243.9
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
9293.5 623,464		8795.9 616,279		8795.9 616,279		8780.0 615,602	0.18 0.11
Undesired		Total IX		Unique IX, before		Unique IX, after	
WTVA D11 DT BL		0.0 0		0.0 0			
WTVA D11 DT APP		15.9 677				15.9 677	

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Interference to BLCDT20121106AAT LIC, scenario 1

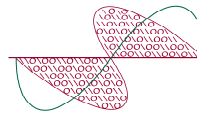
	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KMLU	D11	DT	LIC	COLUMBIA, LA	BLCDT20121106AAT	
Undesireds:	WTVA	D11	DT	BL	TUPELO, MS	DTVBL74148	329.9 km
	WTVA	D11	DT	APP	TUPELO, MS	WTVA 42.1kW Prop	329.9
	KETZ	D10	DT	LIC	EL DORADO, AR	BLEDT20090615ABU	99.0
	WYES-TV	D11	DT	LIC	NEW ORLEANS, LA	BLEDT20090818AAE	320.9
	WJTV	D12	DT	LIC	JACKSON, MS	BLCDT20111014ABR	156.8
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
42057.9 711,951		41608.6 708,107		40275.0 695,673		40271.0 695,673	0.01 0.00
Undesired		Total IX		Unique IX, before		Unique IX, after	
WTVA D11 DT BL		28.4 900		0.0 0			
WTVA D11 DT APP		60.7 1,248				4.0 0	
KETZ D10 DT LIC		1003.0 5,387		1003.0 5,387		1003.0 5,387	
WYES-TV D11 DT LIC		71.7 961		55.5 468		55.5 468	
WJTV D12 DT LIC		275.1 6,579		242.7 5,655		218.4 5,331	

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Interference to proposal, scenario 1

\*\*MX: 0.72% interference

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WTVA	D11	DT	APP	TUPELO, MS	WTVA 42.1kW Prop	
Undesireds:	WTZT-CD	D11	DC	APP	ATHENS, AL	BPDVA20130508AIV	257.0 km
	KMLU	D11	DT	LIC	COLUMBIA, LA	BLCDT20121106AAT	329.9
Service area		Terrain-limited		IX-free		Percent IX	
46834.7 823,492		45696.4 810,123		45192.9 804,309		1.10 0.72	

**Table 1 WTVA(DT) OET Bulletin 69 Interference Study**  
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Undesired		Total IX		Unique IX	Prcnt Unique IX	
WTZT-CD D11 DC APP	20.0	213	20.0	213	0.04	0.03
KMLU D11 DT LIC	483.5	5,601	483.5	5,601	1.06	0.69

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Interference to proposal, scenario 2  
0.74% interference

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WTVA	D11	DT	APP	TUPELO, MS	WTVA 42.1kW Prop	
Undesireds:	WTZT-CD	D11	DC	LIC	ATHENS, AL	BLDVA20120221ABI	243.9 km
	KMLU	D11	DT	LIC	COLUMBIA, LA	BLCDT20121106AAT	329.9

Service area		Terrain-limited		IX-free	Percent IX
46834.7	823,492	45696.4	810,123	45184.9	804,136
					1.12
					0.74

Undesired		Total IX		Unique IX	Prcnt Unique IX	
WTZT-CD D11 DC LIC	28.0	386	28.0	386	0.06	0.05
KMLU D11 DT LIC	483.5	5,601	483.5	5,601	1.06	0.69

**Channel and  
Facility  
Information**

Section	Question	Response
Proposed Community of License	Facility ID	74148
	State	Mississippi
	City	TUPELO
	DTV Channel	11
Facility Type	Facility Type	Commercial
	Station Type	Main
Zone	Zone	2

**Antenna Location  
Data**

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1040183
Coordinates (NAD83)	Latitude	33° 47' 40.0" N+
	Longitude	089° 05' 16.0" W-
	Structure Type	GTOWER-Guyed Structure Used for Communication Purposes
	Overall Structure Height	475.4 meters
	Support Structure Height	457.8 meters
	Ground Elevation (AMSL)	176.7 meters
Antenna Data	Height of Radiation Center Above Ground Level	466.2 meters
	Height of Radiation Center Above Average Terrain	540.9 meters
	Height of Radiation Center Above Mean Sea Level	642.9 meters
	Effective Radiated Power	42.1 kW



**Antenna  
Technical Data**

Section	Question	Response
Antenna Type	Antenna Type	Non-Directional
	Do you have an Antenna ID?	
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	ERI
	Model	ATW9V3-HTO-11H
	Rotation	
	Electrical Beam Tilt	0.75
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Horizontal
DTV and DTS: Elevation Pattern	Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?	No
	Uploaded file for elevation antenna (or radiation) pattern data	

**Construction  
Permit  
Certifications**

Section	Question	Response
<b>Post-Incentive Auction Expedited Processing</b>	It will operate on the DTV channel for this station as established in the post-incentive auction channel reassignment public notice.	Yes
	It will operate post-incentive auction facilities that do not expand the noise-limited service contour in any direction beyond that established by the post-incentive auction channel reassignment public notice.	No
	It will operate post-incentive auction facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the post-incentive auction channel reassignment public notice.	Yes
	The antenna structure to be used by this facility has been registered by the Commission and will not require re-registration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely affect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7.	Yes
<b>Environmental Effect</b>	Would a Commission grant of Authorization for this location be an action which may have a significant environmental effect? (See Section 1.1306 of 47 C.F.R.)	No
<b>Broadcast Facility</b>	The proposed facility complies with the applicable engineering standards and assignment requirements of 47 C. F.R. Sections 73.616, 73.622(i), 73.623(e), 73.625, 73.1030, and 73.1125.	Yes