

**ENGINEERING STATEMENT**

The engineering data contained herein have been prepared on behalf of FOUR SEASONS PEORIA, LLC, licensee of full-power digital television station WAOE-DT, Channel 10 in Oswego, Illinois, in support of this amendment to its pending Application for Construction Permit LMS-0000168790, now to specify a different antenna pattern and an increase in the effective radiated power. No change in transmitter site location or antenna height above ground is proposed herein. In this report, we also provide support for the fact that the proposal meets the “Largest Station In the Market” exception to the Commission’s maximum power/height requirements for VHF television station proposals, and that the loss area generated by this proposal is served by five or more other off-air television services.

It is proposed to mount an Alive Telecom directional, circularly-polarized slotted cylinder antenna at the 402.6-meter level of the existing 418.6-meter WAOE-DT tower. This is the location of the licensed WAOE-DT antenna. The proposed horizontal effective radiated power for the facility will now be 30.0 kW. Exhibit B is a map upon which the proposed predicted service contours are plotted. As shown, the community of Oswego continues to be completely encompassed by the proposed 43 dBu city-grade service contour, as required by Commission Rules.

It should be noted that the proposed WAOE-DT facility exceeds the power/height limits for a high-band VHF station located in Zone 1, as set forth in Section 73.622(f)(7)(ii) of the Commission’s Rules. However, since the area within the proposed WAOE-DT F(50,90) service

**EXHIBIT A**

contour comprises 30,582 square kilometers, and it is smaller than that of the WLS-TV authorized service contour (41,867 square kilometers), it means that the WAOE-DT facility proposed herein continues to meet the requirements of Section 73.622(f)(5) of the Rules, which stipulates that the Commission's power/height limitations of Section 73.622(f)(7)(ii) can be exceeded as long as the coverage area of the proposed operation does not exceed that of the largest station in the same market.

Azimuth pattern information for the proposed antenna are provided in Exhibit C.

In Exhibit D, we provide the summary results from a TVStudy interference study, which was conducted using a cell size of 2.0 kilometers and increment spacing of 1.0 kilometer. It concludes that the proposed WAOE-DT facility meets the Commission's de minimis interference criteria to all co-channel and adjacent-channel full-power and Class A facilities. It is important to note that that study indicates that the proposed WAOE-DT facility would receive interference to 3.74% of its service population from a pending proposal for WILL-TV, Channel 9 in Urbana, Illinois (BPEDT-20100406ABJ). That interference is hereby accepted by WAOE-DT and can be ignored.

A power density calculation appears as Exhibit E, and a loss area analysis is appended to this engineering report.

Since no change in the overall height or location of the existing tower is proposed herein, the Federal Aviation Administration has not been notified of this application. In addition, the Federal Communications Commission issued Antenna Structure Registration Number 1028357 to this tower.

EXHIBIT A

I declare under penalty of perjury that the foregoing statements and the attached exhibits, which were prepared by me or under my immediate supervision, are true and correct to the best of my knowledge and belief.

A handwritten signature in blue ink, appearing to read "K. T. Fisher", with a stylized, elongated final letter.

KEVIN T. FISHER

November 23, 2021

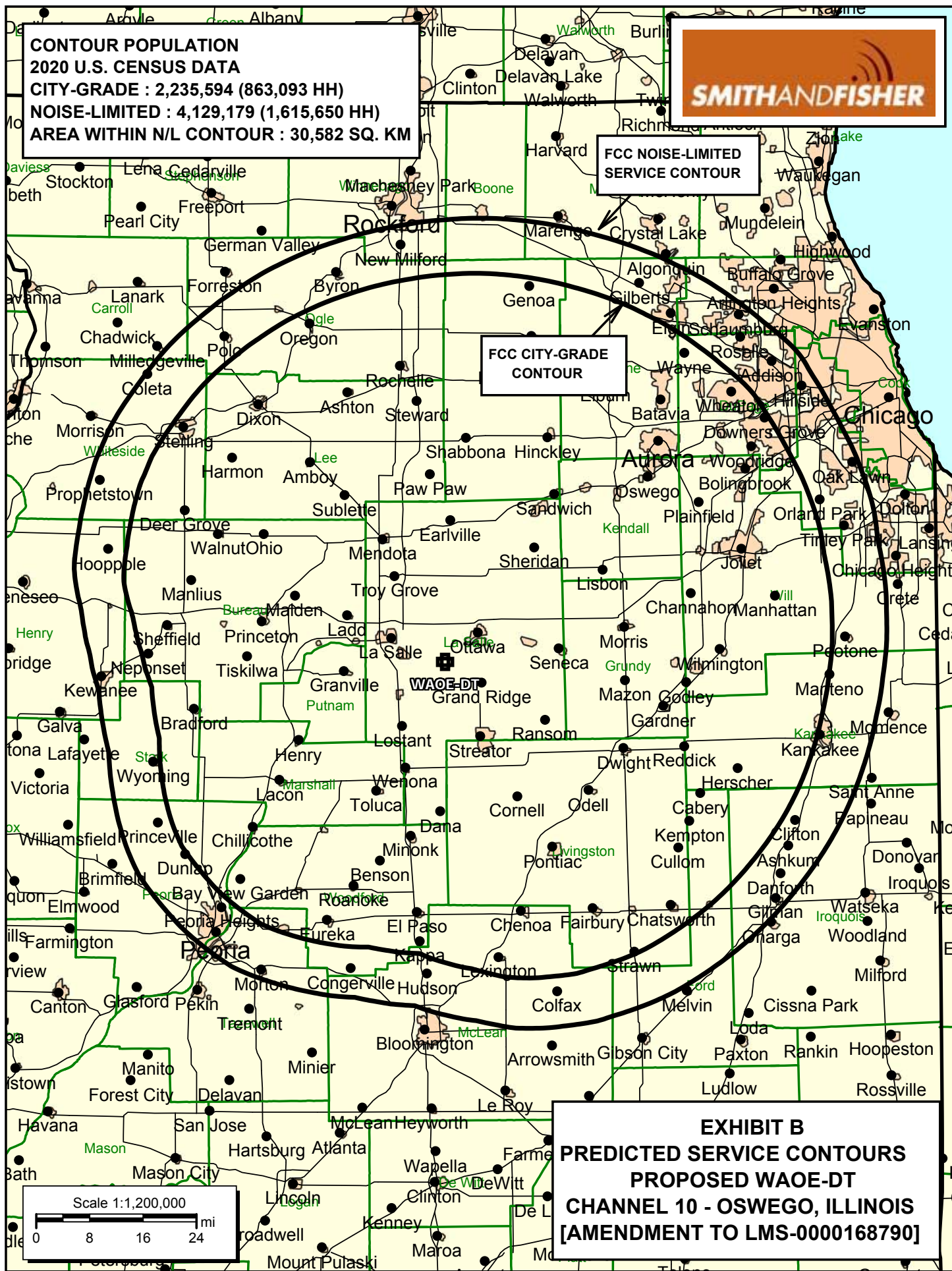
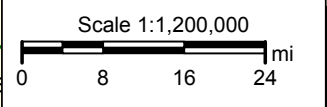
**CONTOUR POPULATION**  
**2020 U.S. CENSUS DATA**  
**CITY-GRADE : 2,235,594 (863,093 HH)**  
**NOISE-LIMITED : 4,129,179 (1,615,650 HH)**  
**AREA WITHIN N/L CONTOUR : 30,582 SQ. KM**



**FCC NOISE-LIMITED  
SERVICE CONTOUR**

**FCC CITY-GRADE  
CONTOUR**

**EXHIBIT B**  
**PREDICTED SERVICE CONTOURS**  
**PROPOSED WAOE-DT**  
**CHANNEL 10 - OSWEGO, ILLINOIS**  
**[AMENDMENT TO LMS-0000168790]**



Antenna Pattern

Pre-Rotation Antenna Pattern....

Azimuth (deg)	Relative Field
0.0	1.0
10.0	0.989
20.0	0.956
30.0	0.907
40.0	0.848
50.0	0.785
60.0	0.723
70.0	0.667
80.0	0.612
90.0	0.554
100.0	0.489
110.0	0.413
120.0	0.328
130.0	0.247
140.0	0.2
150.0	0.214
160.0	0.262
170.0	0.306
180.0	0.322
190.0	0.306
200.0	0.262
210.0	0.214
220.0	0.2
230.0	0.247
240.0	0.328
250.0	0.413
260.0	0.489
270.0	0.554
280.0	0.612
290.0	0.667
300.0	0.723
310.0	0.785
320.0	0.848
330.0	0.907
340.0	0.956
350.0	0.989

Rotation Angle = 0

EXHIBIT C

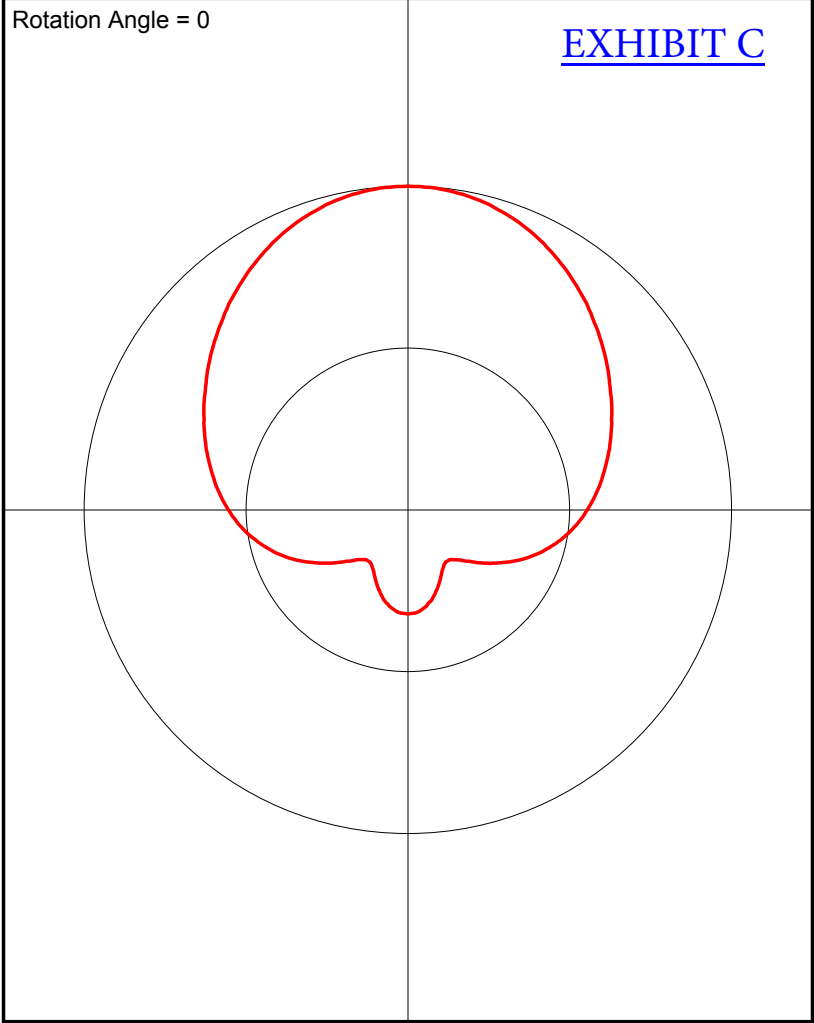


EXHIBIT D

TVSTUDY INTERFERENCE ANALYSIS RESULTS  
 PROPOSED WAOE-DT  
 CHANNEL 10 – OSWEGO, ILLINOIS  
 (AMENDMENT TO LMS-0000168790)

Study created: 2021.11.19 15:16:22

Study build station data: LMS TV 2021-11-18

Proposal: WAOE D10 DT APP OSWEGO, IL

File number: BLANK0000168790

Facility ID: 52280

Station data: User record

Record ID: 1214

Country: U.S.

Zone: I

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
Yes	WILL-TV	D9	DT	APP	URBANA, IL	BPEDT20100406ABJ	140.0 km
Yes	WILL-TV	D9	DT	LIC	URBANA, IL	BLEDT20050920AEE	140.0
No	WISH-TV	D9	DT	LIC	INDIANAPOLIS, IN	BLANK0000055426	277.6
Yes	WGEM-TV	D10	DT	LIC	QUINCY, IL	BLANK0000105998	250.4
Yes	WTHI-TV	D10	DT	LIC	TERRE HAUTE, IN	BLCDT20090622ACG	262.0
Yes	WILX-TV	D10	DT	LIC	ONONDAGA, MI	BLCDT20120404ACG	383.5
No	KTTC	D10	DT	LIC	ROCHESTER, MN	BLCDT20101102ACA	383.0
No	KTTC	D10	DT	CP	ROCHESTER, MN	BLANK0000035728	383.0
No	WCIX	D11	DT	LIC	SPRINGFIELD, IL	BLANK0000113046	172.8
No	WCIX	D11	DT	CP	SPRINGFIELD, IL	BLANK0000127610	172.8
No	WLFI-TV	D11	DT	LIC	LAFAYETTE, IN	BLCDT20040520AIX	219.2
No	WISC-TV	D11	DT	LIC	MADISON, WI	BLANK0000126605	203.3

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D10

Latitude: 41 16 54.60 N (NAD83)

Longitude: 88 56 11.10 W

Height AMSL: 596.6 m

HAAT: 410.7 m

Peak ERP: 30.0 kW

Antenna: Alive Cardioid Antenna 45.0 deg

Elev Pattn: Generic

Elec Tilt: 0.50

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	20.0 kW	415.3 m	106.6 km
45.0	30.0	442.6	112.6
90.0	20.0	406.6	105.9
135.0	9.21	396.9	98.7
180.0	1.44	401.6	84.6
225.0	3.11	394.4	90.1
270.0	1.43	401.7	84.6
315.0	9.21	423.6	100.5

Database HAAT does not agree with computed HAAT

Database HAAT: 411 m    Computed HAAT: 410 m

ERP exceeds maximum

ERP: 30.0 kW    ERP maximum: 11.2 kW

Distance to Canadian border: 487.8 km

Distance to Mexican border: 1701.7 km

Conditions at FCC monitoring station: Allegan MI

Bearing: 58.2 degrees    Distance: 287.0 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

Bearing: 270.1 degrees    Distance: 1375.9 km

Study cell size: 2.00 km

Profile point spacing: 1.00 km

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

Maximum new IX to LPTV: 2.00%

---- Below is IX received by proposal BLANK0000168790 ----

Proposal receives 3.74% interference from scenario 1

Proposal receives 3.74% interference from scenario 2

No IX check failures found.



POWER DENSITY CALCULATION

PROPOSED WAOE-DT  
CHANNEL 10 – OSWEGO, ILLINOIS  
[AMENDMENT TO LMS-0000168790]

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this Oswego facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 30.0 kW (H,V), an antenna radiation center 402.6 meters above ground, and the specific elevation pattern of the proposed Alive antenna, maximum power density two meters above ground of  $0.00030 \text{ mW/cm}^2$  is calculated to occur 126 meters northeast of the base of the tower. Since this value is only 0.1 percent of the  $0.2 \text{ mW/cm}^2$  reference for uncontrolled environments (areas with public access) surrounding a facility operating in the High VHF Television Band, a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.

**APPENDIX**

LOSS AREA ANALYSIS

ENGINEERING STATEMENT  
[AMENDMENT TO LMS-0000168790]

Attached is a map upon which the noise-limited service contours of WAOE-DT, as licensed in LMS- 0000151562 and proposed herein, are plotted. We have highlighted the “loss” area in green within the present contour that will no longer be located within the new WAOE-DT contour. . It is important to note that there will be an accompanying “gain” area (highlighted in purple) that will be created by the new WAOE-DT facility.

The population within the loss area is 219,334, according to the 2020 U.S. Census data. This represents just 5.9% of the presently licensed WAOE-DT service population. Conversely, there are 654,414 people residing within the proposed WAOE-DT gain area. This represents a 17.5% increase in service population when compared to the present WAOE-DT facility.

To our map, we have added the authorized service contours of the many full-power digital television stations that place a predicted service contour over some portion of the loss and/or gain areas. Following the map is a list of these other television services that were included in our study.

Our analysis has revealed that these other stations provide at least five off-air services to viewers living in the loss area and therefore this area is considered by the Commission to be adequately served. We have also defined (in orange on the map) two areas within the gain area that are considered to be “underserved” by the Commission (fewer than five over-the-air television signal contours within the area). These areas are located south of Rockford, Illinois, and south of Kankakee, Illinois. The instant facility will provide a second,

third, fourth and fifth service to a total of 6,540 people in these two underserved portions of the gain area.

I declare under penalty of perjury that the foregoing statements and the attached exhibits are true and correct to the best of my knowledge and belief.

A handwritten signature in blue ink, appearing to read "K. T. Fisher", with a stylized, cursive-like script.

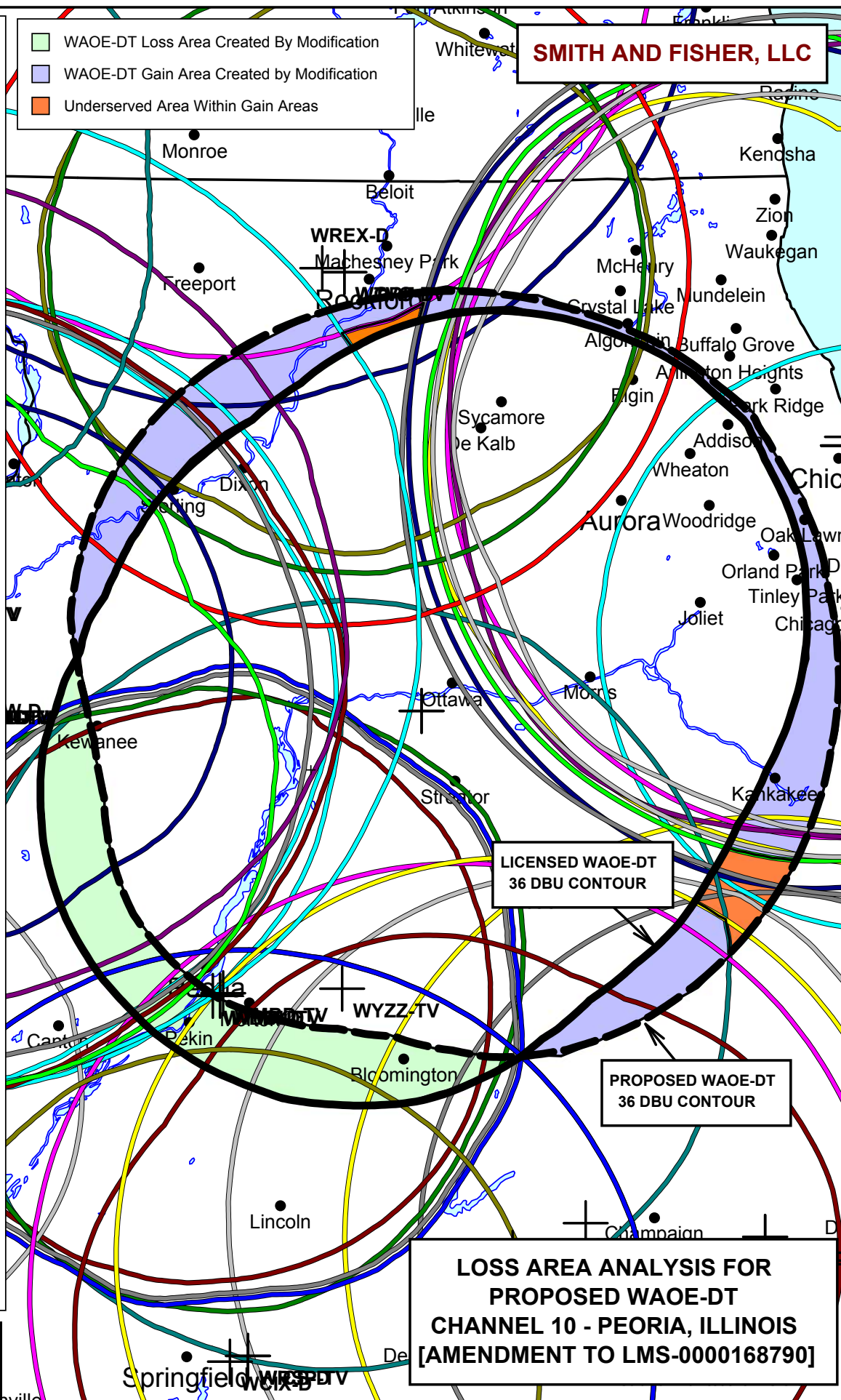
KEVIN T. FISHER

November 23, 2021

**SMITH AND FISHER, LLC**

- WAOE-DT Loss Area Created By Modification
- WAOE-DT Gain Area Created by Modification
- Underserved Area Within Gain Areas

- Proposed (10)
- WAOE-D (10)
- KFXB-TV (14)
- KWQC-TV (17)
- KGCW-D (21)
- KLJB-D (30)
- KQIN-D (34)
- WHBF-TV (4)
- WMWC-TV (8)
- WJYS-D (21)
- WILL-TV (9)
- WCIX-D (11)
- WBBM-TV (12)
- WREX-D (13)
- WICS-D (15)
- WTVO-D (16)
- WRSP-TV (16)
- WGN-TV (19)
- WAND-D (20)
- WBUI-D (22)
- WQPT-TV (23)
- WCIU-TV (23)
- WHOI-D (24)
- WQRF-TV (36)
- WMEC-D (36)
- WEEK-TV (25)
- WMBD-TV (26)
- WYZZ-TV (28)
- WMAQ-TV (29)
- WGBO-DT (35)
- WTVP-D (35)
- WFLD-D (31)
- WQAD-TV (31)
- WCIA-D (34)
- WCPX-TV (34)
- WMSN-TV (18)
- WISC-TV (11)
- WYIN-D (17)
- WCCU-D (36)
- WICD-D (32)



**LOSS AREA ANALYSIS FOR  
PROPOSED WAOE-DT  
CHANNEL 10 - PEORIA, ILLINOIS  
[AMENDMENT TO LMS-0000168790]**

Call Sign	Lic	Chan.	Svc	Cls	City	ST	DA	Power	HAAT (m)	Facility ID	File Number
Proposed		10	T		Oswego	IL	Yes	30.0	410.7	52280	DTVBL52280
WAOE-D	LI	10	T	1C	Oswego	IL	Yes	24.0	212.0	52280	0000151562
KFXB-TV	LI	14	T	2C	Dubuque	IA	Yes	580.0	261.0	17625	0000063821
KWQC-TV	LI	17	T	2C	Davenport	IA	Yes	1000.0	375.1	6885	0000097891
KGCW-D	LI	21	T	1C	Burlington	IA	Yes	1000.0	316.4	7841	0000107917
KLJB-D	LI	30	T	1C	Davenport	IA	Yes	1000.0	328.1	54011	0000099537
KQIN-D	LI	34	T	1E	Davenport	IA	Yes	199.5	233.0	5471	BLEDT-20120921A
WHBF-TV	LI	4	T	2C	Rock Island	IL	No	33.7	409.0	13950	BLCDT-20100629A
WMWC-TV	LI	8	T	1C	Galesburg	IL	Yes	23.0	330.0	81946	BLCDT-20120820A
WJYS-D	LI	21	T	1C	Hammond	IN	Yes	140.0	510.0	32334	0000087539
WILL-TV	LI	9	T	1E	Urbana	IL	No	30.0	302.0	68939	BLEDT-20050920A
WCIX-D	LI	11	T	1C	Springfield	IL	No	5.0	175.5	42116	0000113046
WBBM-TV	LI	12	T	1C	Chicago	IL	No	8.0	497.0	9617	BLCDT-20090612A
WREX-D	LI	13	T	1C	Rockford	IL	No	18.0	216.0	73940	0000005114
WICS-D	LI	15	T	1C	Springfield	IL	No	350.0	436.0	25686	0000117321
WTVO-D	LI	16	T	1C	Rockford	IL	No	196.0	201.0	72945	BLCDT-20021024A
WRSP-TV	LI	16	T	1C	Springfield	IL	No	360.0	436.0	62009	0000117317
WGN-TV	LI	19	T	1C	Chicago	IL	Yes	645.0	453.0	72115	BMLCDT-20080201
WAND-D	LI	20	T	1C	Decatur	IL	No	1000.0	390.5	70852	0000115806
WBUI-D	LI	22	T	1C	Decatur	IL	Yes	325.0	401.0	16363	BLCDT-20091119A
WQPT-TV	LI	23	T	1E	Moline	IL	Yes	664.0	328.1	5468	0000142182
WCIU-TV	LI	23	T	1C	Chicago	IL	Yes	1000.0	473.0	71428	0000102906
WHOI-D	LI	24	T	1C	Peoria	IL	Yes	402.0	211.6	6866	0000100514
WQRF-TV	LI	36	T	1C	Rockford	IL	Yes	910.0	148.1	52408	0000107925
WMEC-D	LI	36	T	1E	Macomb	IL	No	100.0	129.1	70537	0000113434
WEEK-TV	LI	25	T	1C	Peoria	IL	Yes	536.0	211.6	24801	0000137499
WMBD-TV	LI	26	T	1C	Peoria	IL	Yes	822.0	192.4	42121	0000098193
WYZZ-TV	LI	28	T	1C	Bloomington	IL	No	1000.0	293.0	5875	BLCDT-20060609A
WMAQ-TV	LI	29	T	1C	Chicago	IL	Yes	350.0	508.0	47905	0000053194
WGBO-DT	LI	35	T	1C	Joliet	IL	Yes	635.0	403.0	12498	0000124507
WTVP-D	LI	35	T	1E	Peoria	IL	No	155.0	213.8	28311	0000110583
WFLD-D	LI	31	T	1C	Chicago	IL	Yes	1000.0	475.0	22211	0000055195
WQAD-TV	LI	31	T	1C	Moline	IL	No	1000.0	328.0	73319	0000120809
WCIA-D	LI	34	T	1C	Champaign	IL	Yes	681.0	285.1	42124	0000112599
WCPX-TV	LI	34	T	1C	Chicago	IL	Yes	400.0	510.0	10981	0000087607
WMSN-TV	LI	18	T	1C	Madison	WI	No	440.0	450.0	10221	0000113879
WISC-TV	LI	11	T	1C	Madison	WI	No	46.9	469.2	65143	0000126605

WYIN-D	LI	17	T	1E	Gary	IN	Yes	300.0	290.0	49803	BLEDT-20040206A
WCCU-D	LI	36	T	1C	Urbana	IL	No	125.0	381.0	69544	0000099910
WICD-D	LI	32	T	1C	Champaign	IL	No	1000.0	396.0	25684	0000059351