

Engineering Statement

WMEB-TV Orono, Maine

Nature of the Application

This engineering statement has been prepared on behalf of Maine Public Broadcasting Corporation (“MPB”) licensee of digital television station WMEB-TV, Channel 9, Facility ID 39648, Orono, Maine, in support of a Petition for Rulemaking to amend Section 73.622(j) by substituting UHF Channel 22 for VHF Channel 9 at Orono, Maine for WMEB. In connection with the channel change, MPB proposes to change the following: WMEB would move the transmitter site from its existing antenna structure (ASRN 1225781) located at 44° 42’ 11.6” N, 69° 04’ 45.1” W to their transmitting site on antenna structure ASRN 1035355 located at 44° 45’ 45.0” N, 68° 33’ 56.0” W. Further, the HAAT for the proposed WMEB facility would change to 293 meters and the station proposes to increase power from 15 kW to 1,000 kW.

Allocation Considerations

Section 73.622(f)(8) of the FCC Rules limits the maximum allowable ERP for DTV stations on channels 14-36 with a HAAT of less than 365 meters to 1,000 kW. With a proposed HAAT of 293 meters, WMEB-TV would satisfy this criterion. **Table 1** shows the TVStudy V2.2.5¹ interference analysis for the licensed station, and the TV Study interference analysis in **Table 2** indicates that Channel 22 as proposed with an omnidirectional antenna at 1,000 kW at 293 meters HAAT does not result in any interference or allocation issues for WMEB-TV.

The proposed location of the WMEB-TV tower is 101.4 km from the Canadian border, which is within coordination distance, and *MPB* respectfully requests that coordination with Canada commence as soon as possible. Canadian stations have been taken into consideration in the TV Study interference analysis. WMEB-TV is more than 3,200 km from the Mexican border. Belfast, ME is the closest FCC monitoring station, 54 km away, which is within the 80 km distance in Section 73.1030 of the Commission’s rules for which coordination is recommended. *MPB* understands that coordination is required if the application produces a fundamental field strength of greater than 10 mV/m. However, as can be seen from the TV Study analysis in **Table 2**, signal strength at the Belfast monitoring station is 70.3 dB μ , or 3.3 mV/m, which is far less than the signal density requirement for coordination. At 3,023 km distant, this proposal is not a factor for the Table Mountain receiving zone.

¹ All Studies with TVStudy V 2.2.5 were run with a cell size of 1.0 km and a profile point spacing of 0.1 km.

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There are no non-directional AM stations found within the notification distances specified in sections 1.30002(a) and (b) of the Commission's rules.

Required spacing between co-channel DTV facilities in Section 73.623(d)(2) for Region 1 is 196.3 km. WPX (Channel 22, Boston, MA) is 354.2 km from the proposed facility, and CIHF-DT-13 (Channel 22, Miramichi, NB) is 348.7 km distant. The proposed facility satisfies this requirement.

Community of License

The map in **Figure 1** shows that the Principal Community contours F(50,90) 43 dB μ for Channel 9 and F(50,90) 46.6 dB μ for Channel 22 completely cover the entirety of WMEB-TV's community of license, Orono, Maine, for both the licensed facility and the proposed facility. The contours were generated using V-Soft Probe 5 (version 5.27). The theoretical population within the protected contours of the licensed and proposed facilities is also shown. The licensed Channel 9 F(50,90) 36 dB μ contour contains 490,837 persons (terrain-limited) as opposed to the proposed Channel 22 F(50,90) 39.6 dB μ contour, which contains 396,826. From the TV Study V2.2.5 studies, the interference-free population for Channel 9 is 467,517 persons and the interference-free population for Channel 22 is 395,519 persons.

Population Loss Analysis

The FCC weighs the public interest when a television broadcast facility proposes a service area change. The FCC defines "white area" as locations where the population does not receive any over-the-air television service, "gray area" as locations where the population receives only one over-the-air television service and "underserved area" where the population receives fewer than five other existing services. A terrain-limited contour analysis of the licensed and proposed WMEB facilities performed in TVStudy V2.2.5 shows that the licensed facility F(50,90) 36 dB μ contour has a terrain-limited coverage area of 25,411.4 km², while the proposed facility F(50,90) 39.6 dB μ contour has a coverage area of 29,321.0 km².

Utilizing geographical coverage from TVStudy V2.2.5, the map in **Figure 2** provides an overlay of the Channel 22 coverage area on top of the Channel 9 coverage area to show NCE gain and loss areas. Considering all full-service stations (including commercial stations), the channel change and move proposed herein would

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result in a reduction of service to some population, but the move would not create any new white (unserved) areas. The new loss “gray areas” (one remaining service) would encompass 523 persons and new underserved area (two to four services) created by the move would include 8,565 persons. The gain area includes a population of 25,238 persons, all of which is currently either gray or white area population. Of this 25,238 population, 2,139 will become well served (total of 5 services), 19,656 persons will have one to three other services, and 5,582 persons will receive a first service. When considering NCE services only, the proposal results in a loss of NCE service to 523 persons (who would not be covered with programming supplied by WCBB(DT) and WMED-TV), and a gain area population of 10,681 persons who will receive a first time NCE service. As demonstrated, the proposal results in a preferential arrangement of allotments.

Other Concerns

The number of households with over the air (“OTA”) television reception has been growing at a steady pace in recent years. Many OTA television viewers in the Portland-Auburn DMA utilize “high gain” DTV antennas, usually located indoors or in the attic of the home. But modern commercially available “high gain” television antennas are optimized to receive UHF signals and are functionally of little use when receiving a VHF television signal. Still other OTA viewers utilize small “patch” antennas on indoor television sets. Further, VHF penetration of buildings is poorer than that of UHF, and the proliferation of dimmable LED and fluorescent lighting fixtures and switching power supplies has made VHF viewing inside the home increasingly untenable.

The additional power density advantage inherent in the UHF signal with the elliptically polarized antenna to reach far more of the population is evident as shown in **Figures 3 and 3a**. Increased signal density is critical to digital TV reception of the UHF signal and will help more people in the DMA receive WMEB-TV over the air with an indoor UHF antenna. Note that in **Figure 3a**, the signal density over Orono, the community of license, is far stronger on channel 22. Further, the predominance of television stations in the Bangor market operate on UHF frequencies, putting WMEB-TV at a distinct competitive coverage disadvantage.

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Human Exposure to Radio Frequency Radiation

For completeness, the proposed operation was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility meets the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

An omnidirectional, elliptically-polarized antenna has been specified for the Channel 22 operation and will be top-mounted on the tower with a radiation center of 101.3 meters above ground level. The general population/uncontrolled maximum permitted exposure ("MPE") limit specified in §1.1310 for 521 MHz is $347.3 \mu\text{W}/\text{cm}^2$. The RFR study in **Figure 4**, utilizing the elevation pattern of this antenna, demonstrates that the peak exposure at a maximum of $4.01 \mu\text{W}/\text{cm}^2$ is 1.15% of the most restrictive permissible exposure limit.

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Table 1 – TV Study Interference Study for WMEB-TV as Licensed

tvstudy v2.2.5 (4uoc83)
 Database: 192.168.0.58, Study: WMEB_Lic_Ch09_15kW_Dir_Rev_1km, Model: Longley-Rice
 Start: 2022.04.20 10:36:17

Study created: 2022.04.20 10:36:17

Study build station data: LMS TV 2022-04-19

Proposal: WMEB-TV D9 DT LIC ORONO, ME
 File number: BLEDT20020508AAS
 Facility ID: 39648
 Station data: LMS TV 2022-04-19
 Record ID: e8a2bc3815174fd3a1cfcf6212b6c0ea
 Country: U.S.
 Zone: I

Build options:
 Protect pre-transition records not on baseline channel

Search options:
 Non-U.S. records included
 Baseline record excluded if station has CP

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
Yes	WMTW	D8	DT	LIC	POLAND SPRING, ME	BLCDT20090622ACH	164.3 km
No	WAGM-TV	D8	DT	LIC	PRESQUE ISLE, ME	BMLCDT20121003ABP	227.9
Yes	WMUR-TV	D9	DT	LIC	MANCHESTER, NH	BLANK0000143119	277.5
Yes	WMUR-TV	D9	DT	APP	MANCHESTER, NH	BLANK0000145084	277.5
No	WVER	D9	DT	LIC	RUTLAND, VT	BLANK0000079969	341.3
Yes	WCBB	D10	DT	LIC	AUGUSTA, ME	BLANK0000068517	95.8
Yes	WCBB	D10	DT	APP	AUGUSTA, ME	BLANK0000035738	95.8
No	WMED-TV	D10	DT	LIC	CALAIS, ME	BLEDT20030307AAM	143.0
No	WMEM-TV	D10	DT	LIC	PRESQUE ISLE, ME	BLEDT20090121ABS	227.9
No	CKAM-TV-3	D9	DC	LIC	BLACKVILLE, NB	BLANKCANLP330	338.6
Yes	CKLT-DT	D9	DT	LIC	SAINT JOHN, NB	BLANKCANADA131	239.3
No	CJOH-TV-8	D9	DT	LIC	CORNWALL, ON	BLANKCANADA169	431.7
No	CIMT-DT	D9	DT	LIC	RIVIEREDULOUP, QC	BLANKCANADA295	320.3
No	CHEM-DT	D9	DT	LIC	TROISRIVIERES, QC	BLANKCANADA314	341.2

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D9
 Latitude: 44 42 11.60 N (NAD83)
 Longitude: 69 4 45.10 W
 Height AMSL: 490.0 m
 HAAT: 375.0 m
 Peak ERP: 15.0 kW
 Antenna: DIE-THV-6A9-R S220SP (ID 40127) 0.0 deg
 Elev Pattnr: Generic
 Elec Tilt: 1.25

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	4.13 kW	407.4 m	93.1 km
45.0	2.52	417.0	89.9
90.0	4.54	391.6	92.9
135.0	11.0	388.3	99.6
180.0	15.0	353.9	99.6

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225.0 11.0 274.3 92.0
 270.0 4.54 384.3 92.4
 315.0 2.52 397.0 88.7

Database HAAT does not agree with computed HAAT
 Database HAAT: 375 m Computed HAAT: 377 m

ERP exceeds maximum
 ERP: 15.0 kW ERP maximum: 14.9 kW

****Proposal is within coordination distance of Canadian border**
 Distance to Canadian border: 140.5 km

Distance to Mexican border: 3243.6 km

Conditions at FCC monitoring station: Belfast ME
 Bearing: 180.5 degrees Distance: 28.7 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
 Bearing: 273.1 degrees Distance: 2983.1 km

Study cell size: 1.00 km
 Profile point spacing: 0.10 km

Maximum new IX to full-service and Class A: 0.50%
 Maximum new IX to LPTV: 2.00%

 Interference to BLCDT20090622ACH LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMTW	D8	DT	LIC	POLAND SPRING, ME	BLCDT20090622ACH	
Undesireds:	WMEB-TV	D9	DT	BL	ORONO, ME	DTVBL39648	164.3 km
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	164.3
	WVNY	D7	DT	LIC	BURLINGTON, VT	BLANK0000120365	180.3
	WAGM-TV	D8	DT	LIC	PRESQUE ISLE, ME	BMLCDT20121003ABP	379.3
	WXXA-TV	D8	DT	LIC	ALBANY, NY	BLANK0000185800	296.0
	WMUR-TV	D9	DT	LIC	MANCHESTER, NH	BLANK0000143119	116.8
	CHLT-DT	D8	DT	LIC	SHERBROOKE, QC	BLANKCANADA308	200.7

	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
	47803.1	1,939,518	41844.5 1,676,993	41392.1 1,616,878	0.00 0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
WMEB-TV D9 DT BL	31.0	4,758	29.0 4,755
WMEB-TV D9 DT LIC	31.0	4,758	29.0 4,755
WVNY D7 DT LIC	9.0	311	3.0 89
WAGM-TV D8 DT LIC	6.0	195	3.0 192
WXXA-TV D8 DT LIC	45.2	7,103	23.1 2,532
WMUR-TV D9 DT LIC	321.8	52,154	304.8 47,843
CHLT-DT D8 DT LIC	67.5	230	61.5 68

 Interference to BLCDT20090622ACH LIC scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMTW	D8	DT	LIC	POLAND SPRING, ME	BLCDT20090622ACH	
Undesireds:	WMEB-TV	D9	DT	BL	ORONO, ME	DTVBL39648	164.3 km
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	164.3
	WVNY	D7	DT	LIC	BURLINGTON, VT	BLANK0000120365	180.3
	WAGM-TV	D8	DT	LIC	PRESQUE ISLE, ME	BMLCDT20121003ABP	379.3
	WXXA-TV	D8	DT	LIC	ALBANY, NY	BLANK0000185800	296.0

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WMUR-TV	D9	DT	APP	MANCHESTER, NH	BLANK0000145084	116.8
CHLT-DT	D8	DT	LIC	SHERBROOKE, QC	BLANKCANADA308	200.7

	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
47803.1	1,939,518	41844.5	1,676,993	41149.8 1,583,448	0.00 0.00

Undesired		Total IX	Unique IX, before	Unique IX, after
WMEB-TV D9 DT BL	31.0	4,758	29.0	4,755
WMEB-TV D9 DT LIC	31.0	4,758		29.0 4,755
WVNY D7 DT LIC	9.0	311	3.0	89
WAGM-TV D8 DT LIC	6.0	195	3.0	192
WXXA-TV D8 DT LIC	45.2	7,103	20.1	454
WMUR-TV D9 DT APP	567.1	87,662	547.0	81,273
CHLT-DT D8 DT LIC	67.5	230	61.5	68

Interference to BLANK0000143119 LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMUR-TV	D9	DT	LIC	MANCHESTER, NH	BLANK0000143119	
Undesireds:	WMEB-TV	D9	DT	BL	ORONO, ME	DTVBL39648	277.5 km
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	277.5
	WMTW	D8	DT	LIC	POLAND SPRING, ME	BLCDT20090622ACH	116.8
	WEDN	D9	DT	LIC	NORWICH, CT	BLEDT20090618ACB	169.4
	WWDP	D10	DT	LIC	NORWELL, MA	BLANK0000059580	117.0
	WCBB	D10	DT	LIC	AUGUSTA, ME	BLANK0000068517	182.0
	WVER	D10	DD	LIC	RUTLAND, VT	BLANK0000123122	143.8

	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
26181.1	5,239,967	23965.4	5,013,492	23602.5 4,954,004	0.00 0.00

Undesired		Total IX	Unique IX, before	Unique IX, after
WMEB-TV D9 DT BL	62.1	2,616	10.0	14
WMEB-TV D9 DT LIC	59.1	2,482		10.0 14
WMTW D8 DT LIC	136.2	6,303	76.1	3,293
WEDN D9 DT LIC	232.8	51,177	204.8	45,214
WWDP D10 DT LIC	8.0	7,809	3.0	3,259
WVER D10 DD LIC	3.0	146	3.0	146

Interference to BLANK0000145084 APP scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMUR-TV	D9	DT	APP	MANCHESTER, NH	BLANK0000145084	
Undesireds:	WMEB-TV	D9	DT	BL	ORONO, ME	DTVBL39648	277.5 km
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	277.5
	WMTW	D8	DT	LIC	POLAND SPRING, ME	BLCDT20090622ACH	116.8
	WEDN	D9	DT	LIC	NORWICH, CT	BLEDT20090618ACB	169.4
	WWDP	D10	DT	LIC	NORWELL, MA	BLANK0000059580	117.0
	WCBB	D10	DT	LIC	AUGUSTA, ME	BLANK0000068517	182.0
	WVER	D10	DD	LIC	RUTLAND, VT	BLANK0000123122	143.8

	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
32618.0	5,516,888	30041.0	5,268,647	29441.2 5,187,354	0.00 0.00

Undesired		Total IX	Unique IX, before	Unique IX, after
WMEB-TV D9 DT BL	98.2	5,750	15.1	523
WMEB-TV D9 DT LIC	95.2	5,728		15.1 523
WMTW D8 DT LIC	302.7	23,519	215.5	18,293
WEDN D9 DT LIC	226.9	47,567	199.9	35,591
WWDP D10 DT LIC	21.9	19,394	10.9	8,236
WCBB D10 DT LIC	2.0	0	0.0	0
WVER D10 DD LIC	58.2	2,201	58.2	2,201

Interference to BLANK0000145084 APP scenario 2

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	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WMUR-TV	D9	DT	APP	MANCHESTER, NH	BLANK0000145084	
Undesireds:	WMEB-TV	D9	DT	BL	ORONO, ME	DTVBL39648	277.5 km
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	277.5
	WMTW	D8	DT	LIC	POLAND SPRING, ME	BLCDT20090622ACH	116.8
	WEDN	D9	DT	LIC	NORWICH, CT	BLEDT20090618ACB	169.4
	WWDP	D10	DT	LIC	NORWELL, MA	BLANK0000059580	117.0
	WCBB	D10	DT	APP	AUGUSTA, ME	BLANK0000035738	182.0
	WVER	D10	DD	LIC	RUTLAND, VT	BLANK0000123122	143.8

	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
	32618.0	5,516,888	30041.0	5,268,647	29441.2
			29441.2	5,187,354	0.00
			5,187,354		0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
WMEB-TV D9 DT BL	98.2	5,750	14.1
WMEB-TV D9 DT LIC	95.2	5,728	14.1
WMTW D8 DT LIC	302.7	23,519	218.5
WEDN D9 DT LIC	226.9	47,567	199.9
WWDP D10 DT LIC	21.9	19,394	10.9
WCBB D10 DT APP	3.0	0	0.0
WVER D10 DD LIC	58.2	2,201	58.2

Interference to BLANK0000068517 LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WCBB	D10	DT	LIC	AUGUSTA, ME	BLANK0000068517	
Undesireds:	WMEB-TV	D9	DT	BL	ORONO, ME	DTVBL39648	95.8 km
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	95.8
	WMUR-TV	D9	DT	LIC	MANCHESTER, NH	BLANK0000143119	182.0
	WWDP	D10	DT	LIC	NORWELL, MA	BLANK0000059580	252.6
	WMED-TV	D10	DT	LIC	CALAIS, ME	BLEDT20030307AAM	233.8
	WMEM-TV	D10	DT	LIC	PRESQUE ISLE, ME	BLEDT20090121ABS	317.0
	WENH-TV	D11	DT	LIC	DURHAM, NH	BLEDT20090817ABS	145.3
	CKMI-DT-2	D10	DT	LIC	SHERBROOKE, QC	BLANKCANADA310	218.2

	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
	32240.0	962,609	29483.6	911,239	29062.4
			29062.4	901,578	29059.4
			901,578		0.01
					0.02

Undesired	Total IX	Unique IX, before	Unique IX, after
WMEB-TV D9 DT BL	316.6	6,734	271.4
WMEB-TV D9 DT LIC	320.6	6,884	274.4
WWDP D10 DT LIC	32.9	2,305	31.9
WMED-TV D10 DT LIC	83.6	500	39.3
WMEM-TV D10 DT LIC	41.3	664	12.1
WENH-TV D11 DT LIC	5.0	356	4.0
CKMI-DT-2 D10 DT LIC	7.1	0	6.1

Interference to BLANK0000068517 LIC scenario 2

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WCBB	D10	DT	LIC	AUGUSTA, ME	BLANK0000068517	
Undesireds:	WMEB-TV	D9	DT	BL	ORONO, ME	DTVBL39648	95.8 km
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	95.8
	WMUR-TV	D9	DT	LIC	MANCHESTER, NH	BLANK0000143119	182.0
	WWDP	D10	DT	LIC	NORWELL, MA	BLANK0000059580	252.6
	WMED-TV	D10	DT	LIC	CALAIS, ME	BLEDT20030307AAM	233.8
	WMEM-TV	D10	DT	LIC	PRESQUE ISLE, ME	BLEDT20090121ABS	317.0
	WENH-TV	D11	DT	APP	DURHAM, NH	BLANK0000035771	145.3
	CKMI-DT-2	D10	DT	LIC	SHERBROOKE, QC	BLANKCANADA310	218.2

	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
	32240.0	962,609	29483.6	911,239	29049.5
			29049.5	900,915	29046.5
			900,915		0.01
					0.02

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Undesired		Total IX	Unique IX, before		Unique IX, after	
WMEB-TV D9 DT BL	316.6	6,734	271.4	6,091		
WMEB-TV D9 DT LIC	320.6	6,884			274.4	6,241
WWDP D10 DT LIC	32.9	2,305	28.9	1,840	28.9	1,840
WMED-TV D10 DT LIC	83.6	500	39.3	74	39.3	74
WMEM-TV D10 DT LIC	41.3	664	12.1	182	11.1	182
WENH-TV D11 DT APP	20.9	1,484	17.0	1,019	17.0	1,019
CKMI-DT-2 D10 DT LIC	7.1	0	6.1	0	6.1	0

Interference to BLANK000035738 APP scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WCBB	D10	DT	APP	AUGUSTA, ME	BLANK000035738	
Undesireds:	WMEB-TV	D9	DT	BL	ORONO, ME	DTVBL39648	95.8 km
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	95.8
	WMUR-TV	D9	DT	LIC	MANCHESTER, NH	BLANK0000143119	182.0
	WWDP	D10	DT	LIC	NORWELL, MA	BLANK0000059580	252.6
	WMED-TV	D10	DT	LIC	CALAIS, ME	BLEDT20030307AAM	233.8
	WMEM-TV	D10	DT	LIC	PRESQUE ISLE, ME	BLEDT20090121ABS	317.0
	WENH-TV	D11	DT	LIC	DURHAM, NH	BLEDT20090817ABS	145.3
	CKMI-DT-2	D10	DT	LIC	SHERBROOKE, QC	BLANKCANADA310	218.2

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
34197.6	987,030	31223.0	931,053	30734.5
				917,650
				30730.5
				917,500
				0.01
				0.02

Undesired		Total IX	Unique IX, before		Unique IX, after	
WMEB-TV D9 DT BL	354.9	8,394	298.5	6,301		
WMEB-TV D9 DT LIC	361.0	8,550			302.5	6,451
WWDP D10 DT LIC	36.0	2,199	32.0	2,012	32.0	2,012
WMED-TV D10 DT LIC	107.8	2,705	60.5	1,502	60.5	1,502
WMEM-TV D10 DT LIC	46.4	1,549	11.1	210	10.1	210
WENH-TV D11 DT LIC	20.9	1,279	17.0	1,092	17.0	1,092
CKMI-DT-2 D10 DT LIC	6.1	0	6.1	0	6.1	0

Interference to BLANK000035738 APP scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WCBB	D10	DT	APP	AUGUSTA, ME	BLANK000035738	
Undesireds:	WMEB-TV	D9	DT	BL	ORONO, ME	DTVBL39648	95.8 km
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	95.8
	WMUR-TV	D9	DT	LIC	MANCHESTER, NH	BLANK0000143119	182.0
	WWDP	D10	DT	LIC	NORWELL, MA	BLANK0000059580	252.6
	WMED-TV	D10	DT	LIC	CALAIS, ME	BLEDT20030307AAM	233.8
	WMEM-TV	D10	DT	LIC	PRESQUE ISLE, ME	BLEDT20090121ABS	317.0
	WENH-TV	D11	DT	APP	DURHAM, NH	BLANK000035771	145.3
	CKMI-DT-2	D10	DT	LIC	SHERBROOKE, QC	BLANKCANADA310	218.2

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
34197.6	987,030	31223.0	931,053	30721.5
				917,007
				30717.5
				916,857
				0.01
				0.02

Undesired		Total IX	Unique IX, before		Unique IX, after	
WMEB-TV D9 DT BL	354.9	8,394	298.5	6,301		
WMEB-TV D9 DT LIC	361.0	8,550			302.5	6,451
WWDP D10 DT LIC	36.0	2,199	30.0	2,007	30.0	2,007
WMED-TV D10 DT LIC	107.8	2,705	60.5	1,502	60.5	1,502
WMEM-TV D10 DT LIC	46.4	1,549	11.1	210	10.1	210
WENH-TV D11 DT APP	35.9	1,927	29.9	1,735	29.9	1,735
CKMI-DT-2 D10 DT LIC	6.1	0	6.1	0	6.1	0

Interference to BLANKCANADA131 LIC scenario 1

Call	Chan	Svc	Status	City, State	File Number	Distance
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Engineering Statement

WMEB-TV Orono, Maine

Desired:	CKLT-DT	D9	DT	LIC	SAINT JOHN, NB	BLANKCANADA131			
Undesireds:	WMEB-TV	D9	DT	BL	ORONO, ME	DTVBL39648		239.3	km
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS		239.3	
	WMED-TV	D10	DT	LIC	CALAIS, ME	BLEDT20030307AAM		98.8	
	CKAM-TV-3	D9	DC	LIC	BLACKVILLE, NB	BLANKCANLP330		144.3	
	CJCB-TV-2	D9	DT	LIC	ANTIGONISH, NS	BLANKCANADA138		309.5	

	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX	
U.S.)	357.8	6,507	268.9	5,479	239.6	4,270
	27818.8	302,791	27009.0	299,081	26898.1	295,542
					239.6	4,270
					0.00	0.00

Undesired		Total IX	Unique IX, before	Unique IX, after	
WMEB-TV D9 DT BL	12.1	0	12.1	0	(in U.S.)
WMEB-TV D9 DT LIC	12.1	0		12.1	0 (in U.S.)
WMEB-TV D9 DT BL	35.3	0	21.1	0	
WMEB-TV D9 DT LIC	35.3	0		21.1	0
WMED-TV D10 DT LIC	17.2	1,209	17.2	1,209	(in U.S.)
WMED-TV D10 DT LIC	57.5	3,539	43.4	3,539	
CKAM-TV-3 D9 DC LIC	10.1	0	7.1	0	
CJCB-TV-2 D9 DT LIC	25.2	0	22.1	0	

Interference to proposal scenario 1
4.75% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	
Undesireds:	WMTW	D8	DT	LIC	POLAND SPRING, ME	BLCDT20090622ACH	164.3 km
	WMUR-TV	D9	DT	LIC	MANCHESTER, NH	BLANK0000143119	277.5
	WCBB	D10	DT	LIC	AUGUSTA, ME	BLANK0000068517	95.8
	CKLT-DT	D9	DT	LIC	SAINT JOHN, NB	BLANKCANADA131	239.3
	CIMT-DT	D9	DT	LIC	RIVIEREDULOUP, QC	BLANKCANADA295	320.3

	Service area	Terrain-limited	IX-free	Percent IX
	27395.6	512,282	25411.4	490,837
			24848.0	467,517
				2.22
				4.75

Undesired		Total IX	Unique IX	Prcnt Unique IX
WMTW D8 DT LIC	12.1	681	1.0	109
WMUR-TV D9 DT LIC	57.6	595	40.4	198
WCBB D10 DT LIC	452.6	22,454	430.4	21,862
CKLT-DT D9 DT LIC	60.3	413	60.3	413
CIMT-DT D9 DT LIC	7.0	0	7.0	0

Interference to proposal scenario 2
**MX: 5.00% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	
Undesireds:	WMTW	D8	DT	LIC	POLAND SPRING, ME	BLCDT20090622ACH	164.3 km
	WMUR-TV	D9	DT	APP	MANCHESTER, NH	BLANK0000145084	277.5
	WCBB	D10	DT	LIC	AUGUSTA, ME	BLANK0000068517	95.8
	CKLT-DT	D9	DT	LIC	SAINT JOHN, NB	BLANKCANADA131	239.3
	CIMT-DT	D9	DT	LIC	RIVIEREDULOUP, QC	BLANKCANADA295	320.3

	Service area	Terrain-limited	IX-free	Percent IX
	27395.6	512,282	25411.4	490,837
			24598.5	466,300
				3.20
				5.00

Undesired		Total IX	Unique IX	Prcnt Unique IX
WMTW D8 DT LIC	12.1	681	0.0	0
WMUR-TV D9 DT APP	383.6	4,182	289.9	1,415
WCBB D10 DT LIC	452.6	22,454	359.0	19,785
CKLT-DT D9 DT LIC	60.3	413	60.3	413
CIMT-DT D9 DT LIC	7.0	0	7.0	0

Engineering Statement

WMEB-TV Orono, Maine

Interference to proposal scenario 3

**MX: 4.96% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	
Undesireds:	WMTW	D8	DT	LIC	POLAND SPRING, ME	BLCDT20090622ACH	164.3 km
	WMUR-TV	D9	DT	LIC	MANCHESTER, NH	BLANK0000143119	277.5
	WCBB	D10	DT	APP	AUGUSTA, ME	BLANK0000035738	95.8
	CKLT-DT	D9	DT	LIC	SAINT JOHN, NB	BLANKCANADA131	239.3
	CIMT-DT	D9	DT	LIC	RIVIEREDULOUP, QC	BLANKCANADA295	320.3

Service area	Terrain-limited	IX-free	Percent IX
27395.6	512,282	466,475	2.35 4.96

Undesired	Total IX	Unique IX	Prcnt Unique IX
WMTW D8 DT LIC	12.1 681	1.0 109	0.00 0.02
WMUR-TV D9 DT LIC	57.6 595	40.4 198	0.16 0.04
WCBB D10 DT APP	486.8 23,496	464.6 22,904	1.83 4.67
CKLT-DT D9 DT LIC	60.3 413	60.3 413	0.24 0.08
CIMT-DT D9 DT LIC	7.0 0	7.0 0	0.03 0.00

Interference to proposal scenario 4

**MX: 5.20% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMEB-TV	D9	DT	LIC	ORONO, ME	BLEDT20020508AAS	
Undesireds:	WMTW	D8	DT	LIC	POLAND SPRING, ME	BLCDT20090622ACH	164.3 km
	WMUR-TV	D9	DT	APP	MANCHESTER, NH	BLANK0000145084	277.5
	WCBB	D10	DT	APP	AUGUSTA, ME	BLANK0000035738	95.8
	CKLT-DT	D9	DT	LIC	SAINT JOHN, NB	BLANKCANADA131	239.3
	CIMT-DT	D9	DT	LIC	RIVIEREDULOUP, QC	BLANKCANADA295	320.3

Service area	Terrain-limited	IX-free	Percent IX
27395.6	512,282	465,305	3.32 5.20

Undesired	Total IX	Unique IX	Prcnt Unique IX
WMTW D8 DT LIC	12.1 681	0.0 0	0.00 0.00
WMUR-TV D9 DT APP	383.6 4,182	286.9 1,368	1.13 0.28
WCBB D10 DT APP	486.8 23,496	390.2 20,780	1.54 4.23
CKLT-DT D9 DT LIC	60.3 413	60.3 413	0.24 0.08
CIMT-DT D9 DT LIC	7.0 0	7.0 0	0.03 0.00

Engineering Statement

WMEB-TV Orono, Maine

Table 2 – TV Study Interference Study for WMEB-TV Channel 20 1000kW

tvstudy v2.2.5 (4uoc83)

Database: 192.168.0.58, Study: WMEB_Ch22_1000kW_Omni_S2_Rev_1km, Model: Longley-Rice

Start: 2022.04.20 10:35:22

Study created: 2022.04.20 10:35:22

Study build station data: LMS TV 2022-04-19

Proposal: WMEB-TV D22 DT APP ORONO, ME

File number: WMEB_Ch22_1000kW_Omni_S2

Facility ID: 39648

Station data: User record

Record ID: 841

Country: U.S.

Build options:

Protect pre-transition records not on baseline channel

Search options:

Non-U.S. records included

Baseline record excluded if station has CP

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
Yes	WBPX-TV	D22	DT	LIC	BOSTON, MA	BLANK000075858	354.2 km
No	WLED-TV	D23	DT	LIC	LITTLETON, NH	BLANK0000122384	255.3
No	CIHF-DT-12D21		DT	LIC	ST STEPHEN, NB	BLANKCANADA133	137.9
No	CIHF-DT-13D22		DT	LIC	MIRAMICHI, NB	BLANKCANADA127	348.7
No	CIVB-DT	D22	DT	LIC	RIMOUSKI, QC	BLANKCANADA291	412.7

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D22

Latitude: 44 45 45.00 N (NAD83)

Longitude: 68 33 56.00 W

Height AMSL: 387.8 m

HAAT: 375.0 m

Peak ERP: 1000 kW

Antenna: Omnidirectional

Elev Pattnr: Generic

Elec Tilt: 0.75

39.6 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	1000 kW	341.9 m	104.0 km
45.0	1000	241.6	91.7
90.0	1000	282.6	97.7
135.0	1000	301.5	100.0
180.0	1000	229.1	89.8
225.0	1000	283.1	97.8
270.0	1000	333.4	103.2

Engineering Statement

WMEB-TV Orono, Maine

315.0 1000 328.1 102.7

Database HAAT does not agree with computed HAAT

Database HAAT: 375 m Computed HAAT: 293 m

****Proposal is within coordination distance of Canadian border**

Distance to Canadian border: 101.4 km

Distance to Mexican border: 3282.0 km

****Proposal is within coordination distance of FCC monitoring station**

Conditions at FCC monitoring station: Belfast ME

Bearing: 229.4 degrees Distance: 54.0 km

ERP: 1000 kW HAAT: 298.0 m Field strength: 70.3 dBu, 3.3 mV/m

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

Bearing: 273.3 degrees Distance: 3023.3 km

Study cell size: 1.00 km

Profile point spacing: 0.10 km

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

Maximum new IX to LPTV: 2.00%

Interference to BLANK0000075858 LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WBPX-TV	D22	DT	LIC	BOSTON, MA	BLANK0000075858	
Undesireds:	WMEB-TV	D22	DT	APP	ORONO, ME	WMEB_Ch22_1000kW_Omni_	354.2 km
	WSBK-TV	D21	DT	LIC	BOSTON, MA	BLANK0000117438	22.6
	WFXQ-CD	D21	DC	LIC	SPRINGFIELD, MA	BLANK0000125116	95.8
	WUTH-CD	D22	DC	LIC	HARTFORD, CT	BLANK0000080135	110.5
	WVMA-CD	D22	DC	LIC	WINCHENDON, MA	BLANK0000157576	89.5
	WCWN	D22	DT	LIC	SCHENECTADY, NY	BLANK0000185804	208.0
	WPXG-TV	D23	DT	LIC	CONCORD, NH	BLANK0000078658	90.1

	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
	20778.9	6,833,823	20009.0	6,771,015	18210.5 6,369,336
					18208.5 6,369,127
					0.01 0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
WMEB-TV D22 DT APP	14.1 2,896	2.0 209	
WSBK-TV D21 DT LIC	1193.5 334,330	1105.5 331,682	
WFXQ-CD D21 DC LIC	1.0 0	0.0 0	
WUTH-CD D22 DC LIC	73.2 5,569	33.1 1,237	
WVMA-CD D22 DC LIC	118.0 10,320	84.0 6,363	
WCWN D22 DT LIC	187.3 13,886	88.4 8,157	
WPXG-TV D23 DT LIC	375.5 48,046	350.4 46,244	
		345.4 43,819	

Engineering Statement

WMEB-TV Orono, Maine

Interference to proposal scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WMEB-TV	D22	DT	APP	ORONO, ME	WMEB_Ch22_1000kW_Omni_	
Undesireds:	WPX-TV	D22	DT	LIC	BOSTON, MA	BLANK0000075858	354.2 km
	Service area			Terrain-limited		IX-free	Percent IX
	30563.0	411,579	29321.0	396,826	29292.9	395,519	0.10 0.33
Undesired				Total IX		Unique IX	Prcnt Unique IX
WPX-TV D22 DT LIC			28.2	1,307	28.2	1,307	0.10 0.33

FIGURE 1
PRINCIPAL COMMUNITY CONTOURS
(AS LICENSED AND PROPOSED)

prepared April 2022 for
WMEB-TV (Facility ID 39648)
Chan 22 1000 kW 293 m HAAT

Cavell, Mertz & Associates, Inc.
Manassas, Virginia

LEGEND

- WMEB-TV As Licensed
F(50,90) 43 dB μ Contour
- - - WMEB-TV As Proposed
F(50,90) 46.6 dB μ Contour

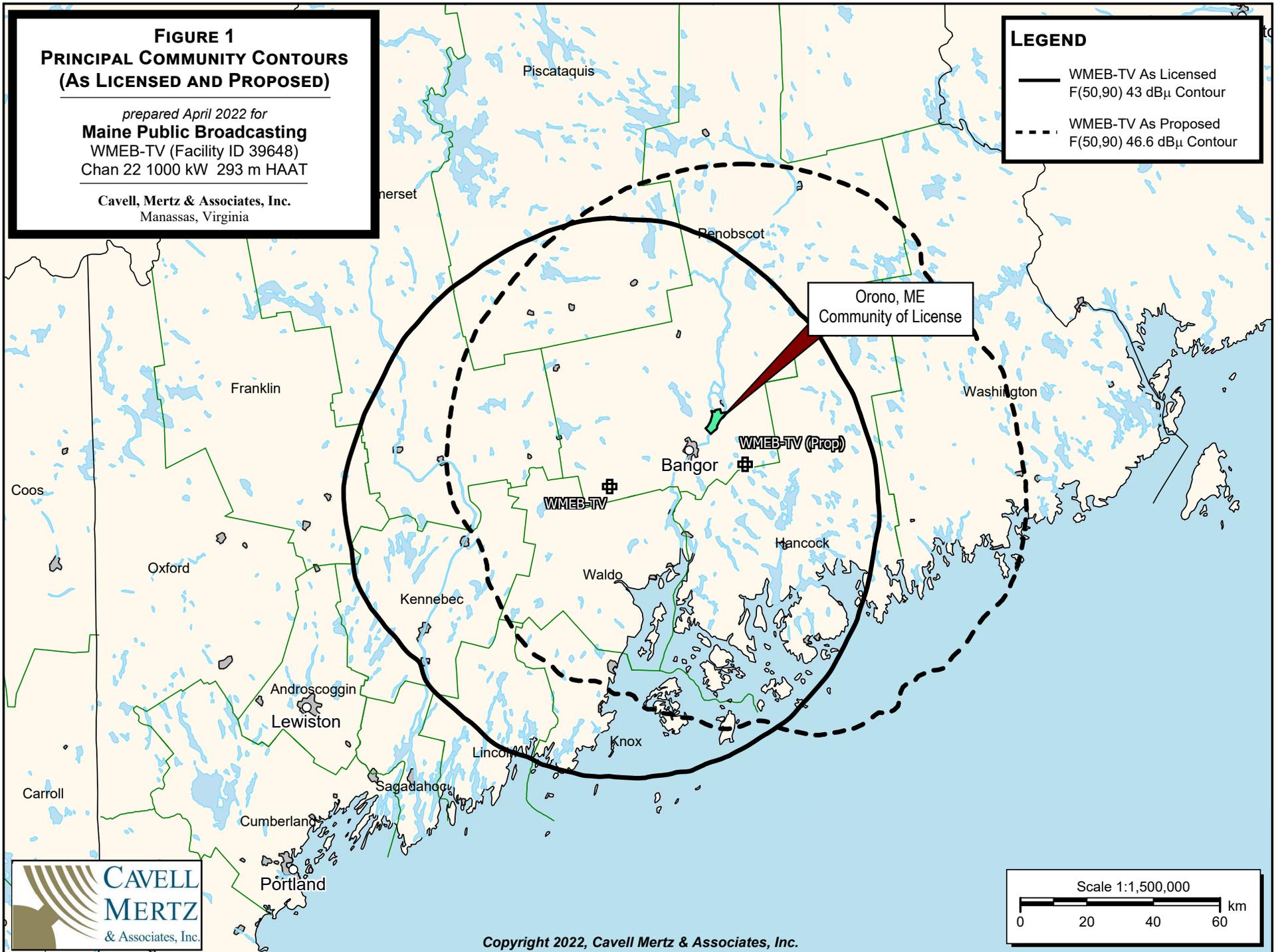
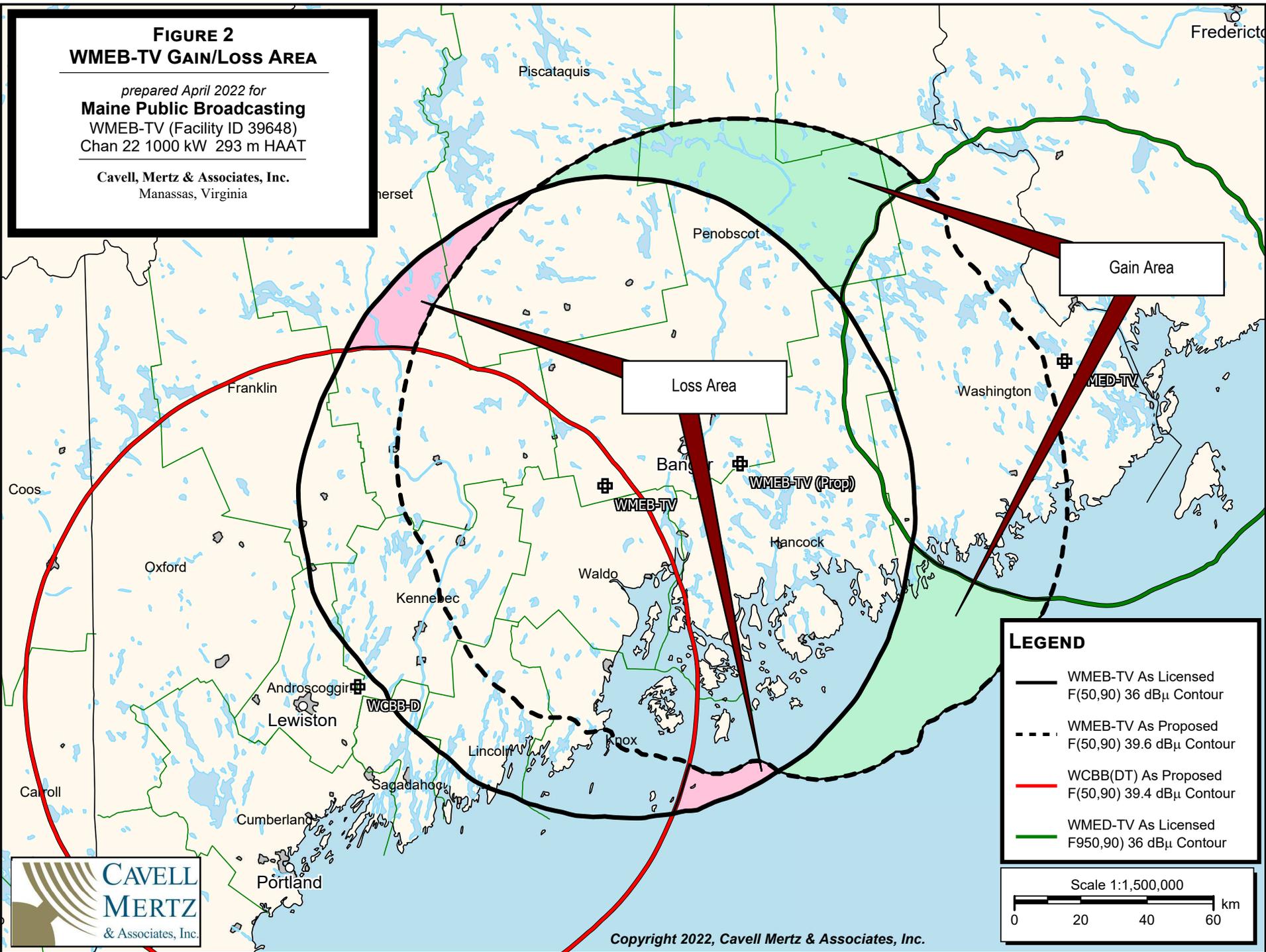


FIGURE 2
WMEB-TV GAIN/LOSS AREA

prepared April 2022 for
Maine Public Broadcasting
WMEB-TV (Facility ID 39648)
Chan 22 1000 kW 293 m HAAT

Cavell, Mertz & Associates, Inc.
Manassas, Virginia



LEGEND

- WMEB-TV As Licensed
F(50,90) 36 dB μ Contour
- WMEB-TV As Proposed
F(50,90) 39.6 dB μ Contour
- WCBB(DT) As Proposed
F(50,90) 39.4 dB μ Contour
- WMED-TV As Licensed
F950,90) 36 dB μ Contour

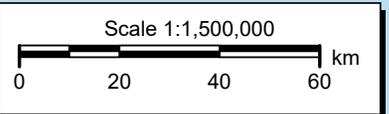


FIGURE 3
WMEB-TV AS LICENSED
TERRAIN-LIMITED SIGNAL DENSITY

prepared April 2022 for
Maine Public Broadcasting
WMEB-TV (Facility ID 39648)
Chan 22 1000 kW 293 m HAAT

Cavell, Mertz & Associates, Inc.
Manassas, Virginia

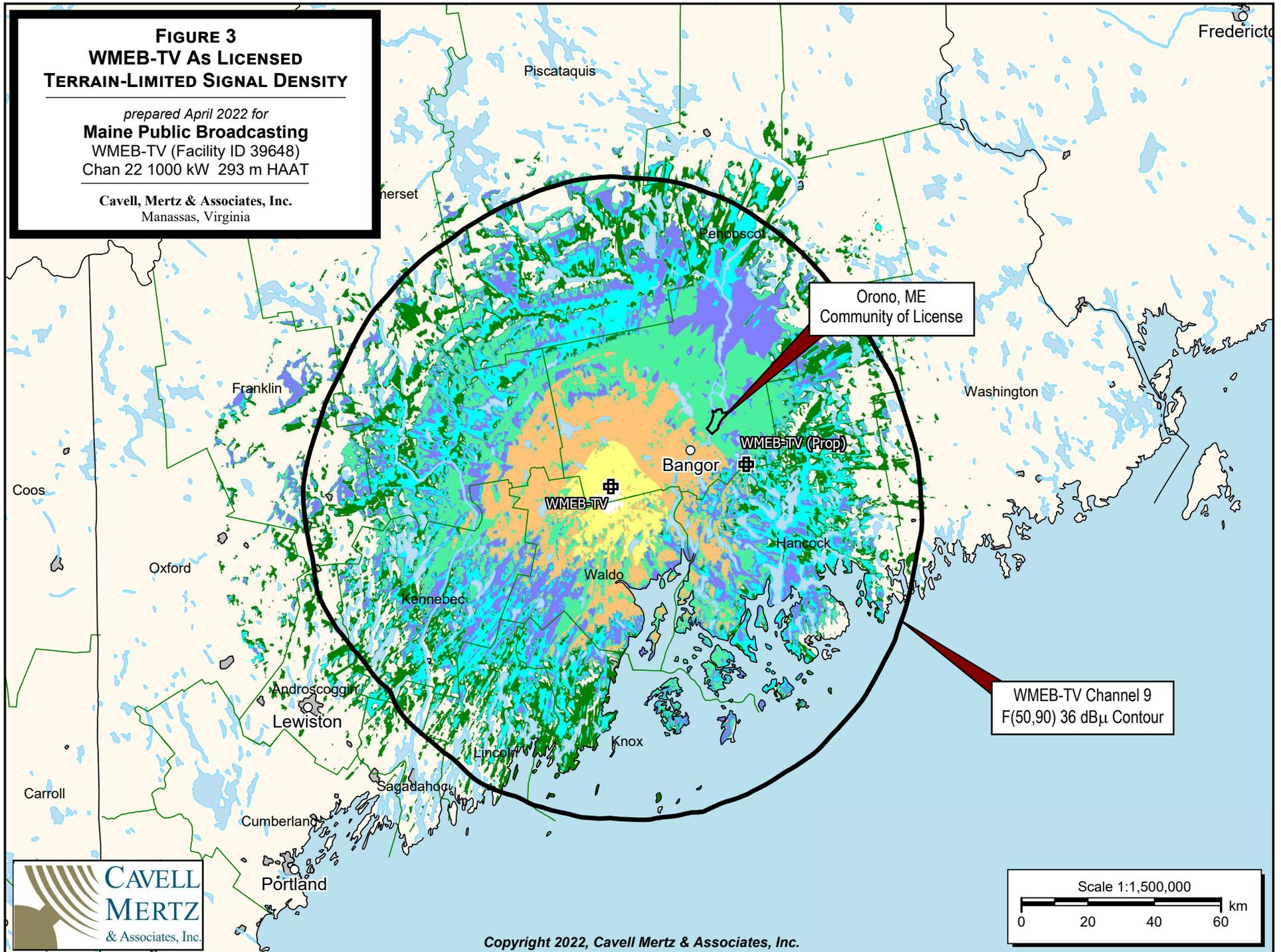


FIGURE 3A
WMEB-TV AS PROPOSED
TERRAIN-LIMITED SIGNAL DENSITY

prepared April 2022 for
Maine Public Broadcasting
WMEB-TV (Facility ID 39648)
Chan 22 1000 kW 293 m HAAT

Cavell, Mertz & Associates, Inc.
Manassas, Virginia

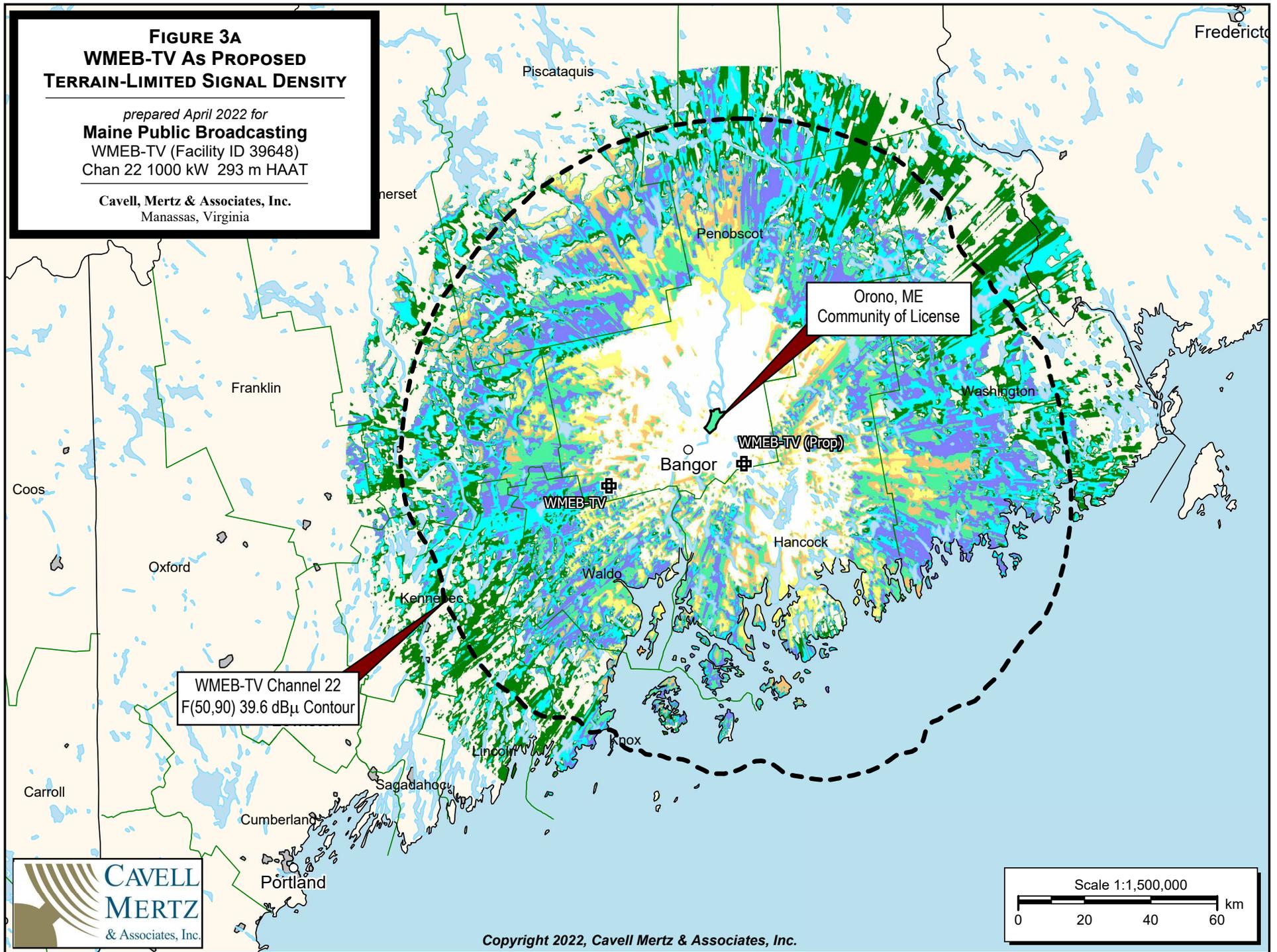


FIGURE 4
WMEB-TV AS PROPOSED
EXPOSURE TO RF EMISSIONS

prepared April 2022 for
Maine Public Broadcasting
WMEB-TV (Facility ID 39648)
Chan 22 1000 kW 293 m HAAT

Cavell, Mertz & Associates, Inc.
Manassas, Virginia

